Eesti Lennuakadeemia
Estonian Aviation Academy

SELF-EVALUATION REPORT FOR INSTITUTIONAL ACCREDITATION

2020

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LIST OF ABBREVIATIONS

AM	Aviation Management
APEL	Accreditation of Prior and Experiential Learning
ATO	Approved Training Organization
ATS	Air Traffic Services
ATSEP	Air Traffic Safety Electronics Personnel
ATSTO	Air Traffic Services Training Organization
CNS	Communication and Navigation Systems
CNS/TECH	Aeronautical Engineering
EASA	European Union Aviation Safety Agency
EAVA	Estonian Aviation Academy
ECAA	Estonian Civil Aviation Administration
ECTS	European Credit Transfer and Accumulation System
EKIS	information system of Estonian schools
EKKA	Estonian Quality Agency for Higher and Vocational Education
EMA	Estonian Military Academy
ETIS	Estonian Research Information System
FEAST	First European Air Traffic Controller Selection Test
FNPT	Flight Navigation Procedural Trainer
GNSS	Global Navigation Satellite System
HE	higher education
HEI	higher education institution
ICAO	International Civil Aviation Organization
MTO	Maintenance Training Organization
MTOE	Maintenance Training Organization Exposition
PHE	professional higher education
PHEI	professional higher education institution
PIL	Pilot Training
RCUA	Estonian Rectors' Conference of Universities of Applied Sciences
RDC	research, development and creative activity
RPAS	remotely piloted aircraft system
SIS	study information system
SP	Strategic Plan
TECH	Aircraft Engineering
UAS	unmanned aerial system
UAV	unmanned aerial vehicle

1. INTRODUCTION

1.1. General

The Estonian Aviation Academy (EAVA) is a state-owned professional higher education institution (PHEI) educating and training specialists for Estonian and international aviation enterprises and organisations. The education institution, founded as Tartu Aviation College in 1993 and renamed Estonian Aviation Academy in 2008, has become a successful Estonian higher education institution whose study process employs the standards of Estonian higher education and those of international aviation.

The Academy's study process has been built on a flexible system of study modules. The studies are carried out at the first level of higher education and at the vocational education level. Continuing education in-service courses and retraining of already practising specialists are provided in order to meet the needs of aviation enterprises. One of the characteristic features of the Estonian Aviation Academy is that part of the teaching is carried out by experienced specialists from Estonian and foreign aviation enterprises and lecturers from other higher education institutions working on a contract basis. EAVA has signed cooperation agreements with the University of Tartu, the Estonian University of Life Sciences and Tallinn University of Technology. This helps maintain the high quality of education and its compliance with the requirements established by the International Civil Aviation Organization (ICAO) and the European Union Aviation Safety Agency (EASA), which in turn ensures the Academy graduates good opportunities in the Estonian and European labour market.

1.2. Brief history of EAVA

The most significant milestones in the history of the Academy are listed below.

1993 – established as Tartu Aviation College under the Ministry of Transport and Communications according to the Outline for the Development of Estonian Aviation for 1993-1996: to create a modern system for the training and certification of aviation specialists

1994 – professional training (Air Traffic Services, Aircraft Maintenance) started; curricula approved by the Estonian Civil Aviation Administration (ECAA)

1995 – HE diploma studies started in cooperation with Estonian universities

1997 – cooperation started with the Estonian Air Force for training the military

1999 – transferred to the Ministry of Education and Research

2000-2002 – internationally approved aviation training organisations (MTO, FTO, ATSTO) launched

2003-2005 – independent assessments, audits, international accreditations, approvals and certification by the ECAA, accreditation of the curricula by the Ministry of Education and Research, quality assurance cooperation with PHEIs

2006-2008 – increased international cooperation (ERASMUS, international cooperation agreements)

2008 – the Government of the Republic approved The Statutes of the Estonian Aviation Academy, pursuant to which Tartu Aviation College was renamed Estonian Aviation Academy

2009 – EAVA adopted learning outcome-based curricula; cooperation agreement with the Estonian National Defence College on educating Air Force officers

2010 – the curricula received a positive assessment at the transitional evaluation by the Ministry of Education and Research

2011 – the new building of the Academy opened at Ülenurme; EAVA won the title of Accomplishment of the Year in Estonian Aviation for completing and implementing its new study centre

2012 – 60° ATC simulator installed, which comprises a ground surveillance radar and an electronic flight data system
– constructive changes made to the study programmes; thematic modules taken into use to enable better cohesion between subject courses
– the Archimedes Foundation awarded the Academy with the Golden Apple 2012 for successful international cooperation in education
2013 – the Academy obtained a Learjet plane to provide better practical training in avionics and automatic and mechatronic systems
– institutional accreditation passed
2014 – helicopter simulator Entrol H11 FNPT II MCC installed
2015 – the Academy received the Quality Award of the Estonian Quality Agency for Higher and Vocational Education (EKKA)
– the annual aviation seminar acquired a new international dimension (working language English; nine presentations from 10 foreign countries)
2016 – launch of the EU Structural Funds project 'Improving the learning and research capacity of the Estonian Aviation Academy in the field of remotely piloted aircraft and promoting internationalisation' (ELASTRA)
2017 – RPAS laboratory opened;
– Aeronautical Engineering study programme approved by the Ministry of Education and Research
2018 – the first group for the workplace-based vocational education of aircraft maintenance technicians started
– MOOC 'Introduction to Aircraft' opened
– 25th Anniversary of the Academy; seminar 'Estonian Aviation 2.5'
2019 – annual seminar dedicated to 100 years of Estonian aviation education
2020 – the first group of aircraft maintenance technicians graduated
– admission to a re-structured 3-year Aviation Management study programme

In 2020, the Estonian Aviation Academy has reached the point where, in addition to educating highly recognised specialists, it is preparing to extend its activities far beyond the boundaries of professional HE. The Academy is offering in-service training to enterprises, the students and academic staff can participate in applied research and cooperation projects, the cooperation of the regional aviation communication network is being fostered – all of this testifies that the ambition of the Academy to become a recognised aviation competence centre can be achieved.

1.3. Strategic Plan and goals

The Estonian Aviation Academy has defined the main objectives of its principal activities – learning and teaching (studies), research and development and serving the society – in the Strategic Plan (SP) of EAVA for 2016-2020 (previously also referred to as the Development Plan of EAVA for 2016-2020). The SP outlines the basis for the operation of the organisation by presenting its strategic goals and the activities necessary for achieving these goals. The strategic goals are set by EAVA in coordination with the Advisory Board and then approved by the Council of EAVA. The SP serves as the framework document for development during the next 5-year period and takes into consideration the state's priorities, general trends regarding the Estonian HE environment, the development of the European aviation system as well as the needs of the Estonian aviation sector and society in general. The SWOT analysis that forms part of the SP is considered a proper analytical method for EAVA to discover its potential and capabilities within this environment. An analysis of its strengths in combination with other internal and external issues assists in determining the necessary strategic activities for achieving the strategic goals.

The three main strategic directions established in the EAVA SP up to 2020 are:

1. **To become a recognised and valued international training organisation**. Although there is much room for a greater level of internationalisation (e.g. opening study programmes in English and attracting more international students), EAVA has had good experiences with various HE institutions from several countries within the framework of the ERASMUS+ programme for many years. This is explained in more detail in Section 3.5.
2. **To become an aeronautical research and development 'gateway' in Estonia**. Research and development is a part of the everyday practice of EAVA. Several short- and long-term projects have been carried out with partner organisations. However, EAVA has not realised its full R&D potential and this field will be given priority during the coming years. Further information on this topic can be found in Section 3.11.
3. **To ensure a sustainable organisation through an effective management system**. EAVA has maintained an efficient management system as provided for in the SP. For example, the number of administrative personnel has been kept at the minimum required level throughout the years. When it comes to general usage of resources, priority is given to education. The ratio of the costs allocated to tasks of both an administrative and academic nature is monitored constantly. An overview of the issues regarding resourcing is given in Section 3.2.

The basic strategic activities of the Academy are:

- training on the basis of the PHE and vocational curricula certified in compliance with international aviation standards
- executing and participating in applied R&D projects
- supporting life-long learning in aviation, offering in-service trainings etc.
- networking with aviation enterprises and organisations as well as educational institutions in order to discover cooperation possibilities for betting serving society
- developing the comprehensive system of PHE and vocational studies

The performance indicators describing the progress of the achievement of the goals set in the SP (2016-2020) as of December 2019 are shown in Table 1.

Table 1. Performance indicators.

No	Indicator	2016 Start	2019 Achieved	2020 Target
Goal: Development of the study process with the aim of developing into a sustainable, internationally recognised educator in aviation (focus: study process)				
1	Ratio of graduates employed or continuing their education (%)	90	97	95
2	Number of foreign visiting teaching staff engaged in speciality studies	0	43	10
3	Number of HE graduates per annum	48	33	50
	Graduates in vocational education (2020)*	n/a	n/a	15
4	Curricula comprising a Speciality Module conducted in English	0	4	4
5	Ratio of dropouts (%)	15	12.4	<15
6	Number of foreign visiting students in speciality studies	0	0	10
7	Student satisfaction with the study programme and organisation of studies (5-point scale)	4.0	3.6	4.2
8	Alumni satisfaction with the study programme and quality of studies (5-point scale)	3.7	3.8	4.1
9	Employer satisfaction with the study programme and quality of studies (5-point scale)	3.9	4.0	4.2

10	Number of in-service training courses offered	35	33	40
11	Number of participants in in-service training courses	510	545	580
Goal: Become an aviation development gateway in Estonia (focus: development activities)				
12	Number of international partners in development projects	0	3	3
13	Number of partners in development projects in Estonia	5	12	15
14	Number of registered spin-off enterprises at the Academy	0	0	2
Goal: Ensuring the sustainability of the Estonian Aviation Academy (focus: development of the organisation)				
15	Ratio of turnover earned from economic activities to state-allocated activity support (%)	5	6.27	15
16	Proportion of non-academic staff engaged in teaching (%)	60	34	70
17	Proportion of teaching staff with experience participating in the activities of academic mobility (%)	10	55	75
18	Student satisfaction with the teaching staff (5-point scale)	4.4	4.7	4.5
19	Proportion of teaching staff with aviation competences and experience in speciality studies (%)	70	56	85
20	Proportion of teaching staff holding a Master's or doctoral degree (%)	55	59	65

*The first graduates in vocational education were in 2020.

Financial resources for HE activities at EAVA are ensured yearly by the Ministry of Education and Research in the form of the activity support directive.

1.4. Mission and vision up to 2020

The mission, vision and strategic goals stem from the role of the Academy and are outlined in the SP.

Mission: The mission of EAVA as a PHEI is to provide high-quality and efficient education and training in aviation as well as development activities.

Vision 2020: By 2020, the Academy is an internationally recognised aviation HEI, proceeding in its activities from the needs of the society, and a highly valued cooperation partner in the field of aviation.

1.5. Students

The total number of students decreased until the 2017/18 academic year, when it started to rise. The biggest decrease was seen in the number of Aviation Communication and Navigation Systems students. Admission to this programme was possible until 2017/18, but from 2018/19, Communication and Navigation Systems has been one of the specialities of the Aeronautical Engineering study programme. The biggest increase in the number of students over the last five years has been in Aviation Management. The number of students has also risen since 2018/19 in the field of technology after the launch of the study programme Aeronautical Engineering, which comprises two specialities: Aviation Communication and Navigation Systems and Aircraft Engineering. The total number of admissions during the period under review has been relatively stable, and a slight rise can be noted from 2018/19 onwards. A more detailed analysis of the

reasons for discontinuing studies is presented in Section 3.10.4. The number of graduates has been relatively stable for all specialities except the field of technology.

Table 2. Aggregate data on students.

Study programme		Academic year					
		2014/15	2015/16	2016/17	2017/18	2018/19	2019/20
Aviation Management	Students	45	47	51	50	59	64
	Admissions	10	14	15	15	17	16
	Dropouts	3	7	5	2	1	
	Graduates	7	4	11	7	9	
Air Traffic Services	Students	42	31	28	26	28	28
	Admissions	6	8	4	6	6	8
	Dropouts	8	1	3	1	2	
	Graduates	11	5	6	3	7	
Aviation Communication and Navigation Systems	Students	56	55	46	31	19	17
	Admissions	12	10	6	5		
	Dropouts	9	5	10	1	2	
	Graduates	5	10	10	10	3	
Aeronautical Engineering	Students					34	48
	Admissions					30	27
	Dropouts					11	
	Graduates						
Aircraft Engineering	Students	86	80	83	80	57	40
	Admissions	18	18	20	20		
	Dropouts	14	9	15	7	10	
	Graduates	14	8	8	14	6	
Aircraft Piloting	Students	46	43	43	45	45	47
	Admissions	10	10	11	11	10	10
	Dropouts	3	2	1	0	1	
	Graduates	11	9	8	9	8	
TOTAL	Students	275	256	251	232	242	244
	Admissions	56	60	56	57	63	61
	Dropouts	37	24	34	11	27	
	Graduates	48	36	43	43	33	

1.6. Personnel

The Academy personnel consists of academic and non-academic staff. Teaching is carried out by the academic staff, the visiting academic staff and a substantial part of the administrative personnel. Data on personnel is presented in Table 3 for each study year as of 1 September.

Employees on parental leave are excluded. A more detailed description of academic staff distribution can be found in Sections 3.2.1 and 3.6.1.

Table 3. Aggregate data on personnel.

		14/15	15/16	16/17	17/18	18/19	19/20
Total ordinary academic staff		18	18	15	12	13	15
Non-academic staff who teach		13	14	19	22	20	18
Sex distribution of academic staff	Men	89%	89%	87%	92%	85%	94%
	Women	11%	11%	13%	8%	15%	6%
Ordinary academic staff with a doctoral degree		4	3	3	3	2	3
Average age of ordinary academic staff		50	43	45	45	48	47
Non-academic staff who do not teach		20	20	17	16	18	18

1.7. Brief description of self-evaluation

The process of self-evaluation for institutional accreditation started in September 2019 when the Rector signed Directive No. 1-2/39 'Approval of the Estonian Aviation Academy's institutional accreditation schedule, project team and workgroups'. The process included preparation, formation of workgroups, a joint seminar of the Academy staff and the representatives of the Estonian Quality Agency for Higher and Vocational Education (EKKA), data collection and analysis, compilation of the self-evaluation report and review of the draft by members of the Rector's Office. The project team included the Rector, Vice Rectors and the Head of the Department of Studies. Workgroups were formed for each accreditation standard and both assessed study programmes. The heads of the workgroups distributed responsibilities within their groups, involving employees, students and alumni. For the initial drafts and accreditation documents, a shared folder '2020 Accreditation' was created. Basic guidance materials and former accreditation reports were also made available on the Intranet. During the compilation process, workgroups held discussions with one another, the project team, employers and the EKKA. From March 2020, due to the COVID-19 lockdown, face-to-face meetings were not possible; therefore, all discussions and consultations took place via the Internet. The self-evaluation report will be introduced to all Academy employees at a seminar in August.

During the process of preparing for institutional accreditation, significant changes took place in the administration of the Academy. In 2019, the Rector's election period ended – during the autumn semester, the Academy was led by an acting rector. The new elected Rector commenced work from January 2020. They analysed the organisation, made changes to the HEI structure and renewed their team. As of April 2020, there are three vice rectors: Vice Rector for Studies, Vice Rector for Development and Vice Rector for Administration.

The previous institutional accreditation of the Estonian Aviation Academy was carried out in 2013 and the decision was made in 2014. The present self-evaluation report covers the period from 2014-2019 and, in some parts, significant facts about 2020 are also reflected.

2. MAIN CHANGES ARISING FROM THE RECOMMENDATIONS OF THE PREVIOUS INSTITUTIONAL ACCREDITATION

Below is a brief overview of the main changes arising from the recommendations of the previous institutional accreditation in 2014.

Table 4. Overview of the main changes.

RECOMMENDATIONS	CHANGES
2.1 Organisational management and performance – *'conforming to requirements'*	
There is the issue of integrating the external quality requirements set for internationally certified training organisations with the HEI quality assurance system	● In improving the quality management system, EAVA has constantly followed the requirement of integrating the principles of aviation and education regulations. The Estonian Quality Agency for Higher and Vocational Education (EKKA) assesses the conformity of the EAVA study process with educational requirements (institutional accreditation 2014, quality assessment of study groups 2016). The Estonian Civil Aviation Administration (ECAA) regularly assesses the compliance of the training provided by EAVA with international aviation requirements. The ECAA has confirmed compliance and issued the training certificates for the ATSTO, ATO and MTO. The differences in the aviation and education requirements have not posed any noteworthy problems. A more detailed description on the topic is presented in Section 3.3.
It is recommended to widen the international mobility of the academic staff. Another issue is the weak language proficiency of some academic staff members.	● The Academy fully supports academic staff teaching at foreign HEIs and participating in various external training events. Academic staff mobility meets the targets set in the Strategic Plan 2016-2020. The trend of academic staff participation in mobility programmes (Erasmus+, DoRa+) has significantly risen (2016 – 28%; 2019 – 55%). More details on this topic can be found in Section 3.5. ● Good command of English (min. B2 level) is one of the prerequisites when recruiting academic staff. Most of the employees have passed the Oxford Placement Test. In most cases, the level of language proficiency meets the requirements for teaching in English. The academic staff can improve their language proficiency in various language courses: this is reflected in the lecturer's personal development plan. Since 2017, lecture observations of teaching in English have taken place. Observations are carried out by a language expert and a subject matter expert. They analyse the lecture with the lecturer and come up with recommendations. The lecture observation protocols are included in the employee's personal file. All academic staff members are also encouraged to participate in visiting lecturers' classes conducted in English.
2.2 Teaching and learning – *'conforming to requirements*'	
The HEI should consider preparing clear regulations regarding students with special needs.	● After receiving this recommendation in 2014, a respective item was added to the Study Regulations. In the present variant of the Study Regulations, item 8.4 'Counselling and support services for learners with special needs' stipulates thorough and detailed rules and guidance.

Due to the international nature of the aviation field, the Academy must actively upgrade the level of student mobility.	● Student mobility targets have been set in the EAVA Strategy for Internationalisation 2016-2020. Most of the targets have been achieved. Various activities have been introduced to facilitate learning mobility. Students are informed about learning mobility opportunities during admission interviews and later there are special briefings aimed at first-year students. At the 'Exchange of Experience' event, students who have participated in learning mobility share their experiences. Second-, third- and fourth-year students are also offered briefings. In 2017, 53% of EAVA graduates participated in Erasmus learning mobility (23% in 2014). With this indicator, EAVA was among the top three HEIs in Estonia. A more detailed description of the Academy's policy of mobility and internationalisation can be found in Section 3.5.
2.3 Research, development and other creative activity (RDC) – *'partially conforming to requirements'* The most significant recommendations of the 2014 accreditation decision concerned the assessment area of RDC activities. A more thorough description on the topic is presented in Section 3.11.	
The HEI has no separate financial means for RDC activities. No concrete strategy has been elaborated for acquiring external resources for applied research or other RDC activities.	● In 2016, the position of Vice Rector for Development was created to coordinate the work of the Development Department and RDC activities, their internal funding and evaluation. In spring 2020, the operation of the Development Department was terminated in order to more closely integrate RDC activities with speciality departments. According to the EAVA Procedure for Research and Development, RDC activities and the allocation of financial means are coordinated at a strategic level by the RDC Council, which is formed by members of all specialities. The budgetary planning for the year 2020 is approximately 40,000 euros.
The HEI should find ways to motivate staff in the field of R&D and cooperate with R&D international networks and regional universities.	● The motivation system of the Academy has been improved – the performance reviews include workload sheets and three-year personal development plans where the employees' activities (incl. R&D) are confirmed. Thus, performance reviews are one of the tools used to evaluate employees' R&D activities. ● During the period from 2015-2020, cooperation ties with universities (incl. foreign) have been consistently growing. In 2016, the ELASTRA project (EU structural funds allocation 440,274.98 euros) was launched, which enabled us to strengthen cooperation with enterprises and increase international and domestic competitiveness. With the support of the project, unique equipment was acquired that other HEIs in the region do not possess. In 2018, EAVA and the University of Tartu organised an international summer school of unmanned aerial vehicles.
The Academy should be more active in the field of R&D, interacting with employers and presenting achievements in order to gain more external money for applied projects.	● The Academy has signed regular cooperation agreements with various enterprises and stakeholders during the period 2014-2020 (Estonian Aviation Cluster, Nordic Aviation Group AS, Estonian Civil Aviation Administration, Threod Systems, Lufthansa Consulting GmbH, NA Advisory, etc.).

The graduation theses should be more analytical and reflect more of the authors' self-dependent thinking. More attention should be paid to making research orientation stronger.	● The students have been involved in carrying out various types of research work – some student research papers are more practical, some more analytical. The proportion of analytical work has increased and supervisors have been able to pay more attention to the analytical parts of dissertations.
2.4 Service to society – *'conforming to requirements'*	
To increase its own revenues, the HEI should consider more possibilities for offering training in the international aviation market.	● The Academy is continuing the development of study programme modules in English. Currently, there are speciality modules in Air Traffic Services and Aircraft Piloting, an Aviation Management module for Erasmus students and an RPAS module which can be offered to both visiting and domestic students. After the accreditation of study groups in 2016, EAVA started analysing and restructuring its curricula. As a result, the new Aviation Management study programme has been principally restructured: its nominal period is three years, and the main objective of restructuring was to better align the study programme orientation with employers' (incl. international) needs and increase the proportion of foreign visiting students in ELA curricula. The new Aviation Management programme serves as a basis for developing an English-language study programme oriented to the international market. The programme includes specific courses related to aviation operations management combined with business and economics subjects. The aviation operations model will be largely based on the digital simulation software platform developed as part of the EEA/Norway cooperation project (see Section 3.11). The programme is planned to start in 2021 and 15-20 international students can be enrolled annually. The graduates will be employed in various sectors of the aviation industry (airlines, airport, GH, etc.). ● In autumn 2020, the ELASTRA II project (EU structural funds allocation 150,588.53 euros) will be launched, which will support EAVA's goal to become a recognised aviation competence centre. As a result of the project, the development prospects of EAVA have been mapped and educational and R&D services packages will be re-profiled in order to be quickly adaptable to labour market developments, forward-looking and organised in cooperation with the aviation sector.

3. SELF-EVALUATION OF THE ACADEMY BASED ON THE STANDARDS

3.1. Strategic management

3.1.1. General

EAVA is mainly guided by its statute, the applicable law and aviation standards. State strategies, mostly related to education, transport, connectivity and aviation, provide important input in planning the development of EAVA. The main basis for the strategic planning and management of the Academy is the Strategic Plan (SP, see Estonian Aviation Academy Development Plan 2016-2020), which presents the strategic goals as well as the necessary activities for achieving these goals. The SP has remained unchanged since its inception in 2016. The performance indicators describing the achievement of the goals are shown in Table 1 above.

In order to support the implementation of the activities and goals set out in the SP, the annual Implementation Plan is developed, which is approved and its execution progress reviewed by the Council of EAVA. The progress of the activities is also monitored by the Advisory Board.

Some of the expected key results (besides the vision and strategic goals) of EAVA are:

- EAVA is capable of delivering high quality services and carrying out its mission by being staffed, financed and organised properly
- the volume and outcome of studies meets the expectations of the aviation sector
- the R&D system and the project-based cooperation with aviation sector entities effectively support studies and serve the Estonian aviation industry and society well
- the satisfaction rate of students, employees and stakeholders is persistently high

The mission, the vision up to 2020 and the strategic goals are formulated in the SP and are described in Section 1.4 above. In addition, EAVA has defined its core values, which remain unchanged up to the present day. This activity involved the vast majority of the staff and the outcome has been published on both the Intranet and EAVA public website. These commonly agreed values are:

- OPENNESS: openness to cooperation, cooperation capability and reliability, capability to create synergy
- COURAGE: courage to change, courage to enter into dialogue, courage to make competence-based decisions
- ENTHUSIASM: enthusiasm to complete the agreed upon tasks and achieve the set goals, taking initiative and being active in all activities undertaken
- DEVOTION: dedication to work, ability to focus and determination

EAVA is suitably staffed, and in-house competence is complemented by a large number of aviation practitioners from the sector. In order to boost EAVA's organisational culture and team spirit, five principles were agreed on in 2016 to guide internal relations within EAVA. These are to be adhered to by each employee daily and are as follows:

- we respect one another and one another's work;
- we abide by agreements and rules
- we are sincere and open
- we trust one another
- we share necessary information, preferably more than the necessary information, directly from the original source

These principles are communicated to EAVA's staff through the Intranet.

For EAVA, it is mandatory to comply with the international rules and standards for aviation, so the approved training organisations within EAVA are guided by the management and safety policy set out in manuals approved by the Rector. A clearly formulated safety policy is of strategic

importance for EAVA, as safety is indisputably the highest priority in aviation – throughout the aviation chain, safety principles are followed by all stakeholders, and without compliance, it is impossible for EAVA to act as a certified training organisation. In addition, EAVA's students are expected to acquire an adequate safety-related attitude while studying in order to be suitably prepared for later jobs in aviation.

EAVA foresees the strengthening of its relations with other educational institutions not only in Estonia but also on an international level. In doing so, we aim to provide educational services jointly and as effectively as possible while increasing the variety of services. Ultimately, this cooperation should result in EAVA's better serving of the wider community and an increase in efficiency.

3.1.2. Management and management structure

Besides the quality of the study process and R&D, the Academy has forecast in its SP a sustainable and effective management system as one of the three key aims of the organisation. Sustainability depends heavily on optimising work processes and setting development goals in such a way that the school proceeds well while taking into consideration the expectations of all main stakeholders. The structure has to be optimised to support EAVA's ability to carry out its functions while using its resources efficiently.

During the period from 2016-2019, EAVA underwent some structural changes, but not all of them proved to add value. For example, the Administration Director's position was found to be excessive, interaction between the Development Department and core units was not sufficient and the General Department operated without sufficient clear focus. During the first three months of the term of office (total 5 years) of the new Rector, both the structure and composition of the organisation were thoroughly reviewed and, as a result, the organisation was reformed in March 2020. The roles of individual units and posts were examined, too, and corrected on several occasions. In general, the structural reform of EAVA was based on the review and analysis of the overall performance of the organisation. The main changes were related to reducing the number of administrative posts, organising development activities effectively and supporting EAVA's activities in such domains as ICT as well as marketing, internalisation and communication by bringing all respective employees together in two newly created departments. The members of the Council gave their unanimous support for this reform plan.

The work in EAVA is organised based on the principles of teamwork; the work of academic, development and support structures is centrally arranged by the administration composed of the Rector, Vice Rectors, heads of units and functions in line with the principle of making consensus-based agreements, wherever possible. Three vice rectors cover and manage all major fields of activity in EAVA – studies, development and administrative matters. The structure of EAVA is outlined in a flat-network style connecting all units. This is a different approach from the previous outline, where the structure was presented as a tree emphasising direct subordinance. The present flat view of the structure clearly shows that each unit is equally important (i.e. a formal hierarchy is not the preferred image of the organisation) and there are no less or more important structural units, but rather everyone is connected. The key is the cooperation of all units. Teamwork is the strategic approach to the internal workings of EAVA, and this new structural visual scheme is intended to support this approach.

Core accountability for strategic planning and the implementation of the approved plans lies with the Rector. The Rector is responsible for presenting the respective reports to the Council of EAVA (the highest decision-making body) and the Advisory Board (primary advising body). These two bodies assess EAVA's progress in fulfilling its tasks at least twice a year, give feedback to the Rector and make proposals for the development of the organisation and its activities. The Advisory Board consists of 12 members, most of whom are representatives of EAVA's important

stakeholders – enterprises and public organisations. The decisions of EAVA which may have the highest impact on the aviation industry are coordinated with the Advisory Board. For example, the number of students to be enrolled in the Academy as well as the division of the total number between separate domains. Specific administrative decisions stipulated by the EAVA Statutes are subject to the approval of the highest collegiate decision-making body – the EAVA Council. Daily matters and urgent issues are discussed in rectorate meetings which are normally are conducted once a week. The rectorate is composed of the Rector, Vice Rectors and heads of functions and units. The meetings of the rectorate are protocolled and the decisions are confirmed by a directive of the Rector.

EAVA has a tradition of organising quarterly general meetings for the exchange of information among the entire staff. During these events, proposals can be made and questions raised by each participant about the organisation, process and future plans of the Academy. This type of informative gathering serves the need for better overall awareness and connects staff, and we foresee the continuation of these events on the same regular basis.

Figure 1 below presents the new structure of EAVA as it was reformed most recently in March 2020. This scheme makes EAVA's focus as a PHEI clear – the key person beside the Rector is the Vice Rector for Studies. This structure supports EAVA's core processes well enough for the time being but is of course subject to change depending on the Academy's need. One important aim of this latest restructuring was to give special attention to EAVA's strategic aims in connection with external relations, internationalisation, marketing and communication. Increased interaction with all kinds of stakeholders through the more effective networking of EAVA with the society is expected. For the abovementioned reasons, a newly dedicated department was established: Department of External Relations and Marketing. We can confirm that we quickly achieved some initial positive results as a result of better marketing by enjoying a *ca* 20% higher rate of applicants per seat this summer compared with the respective number in 2019.

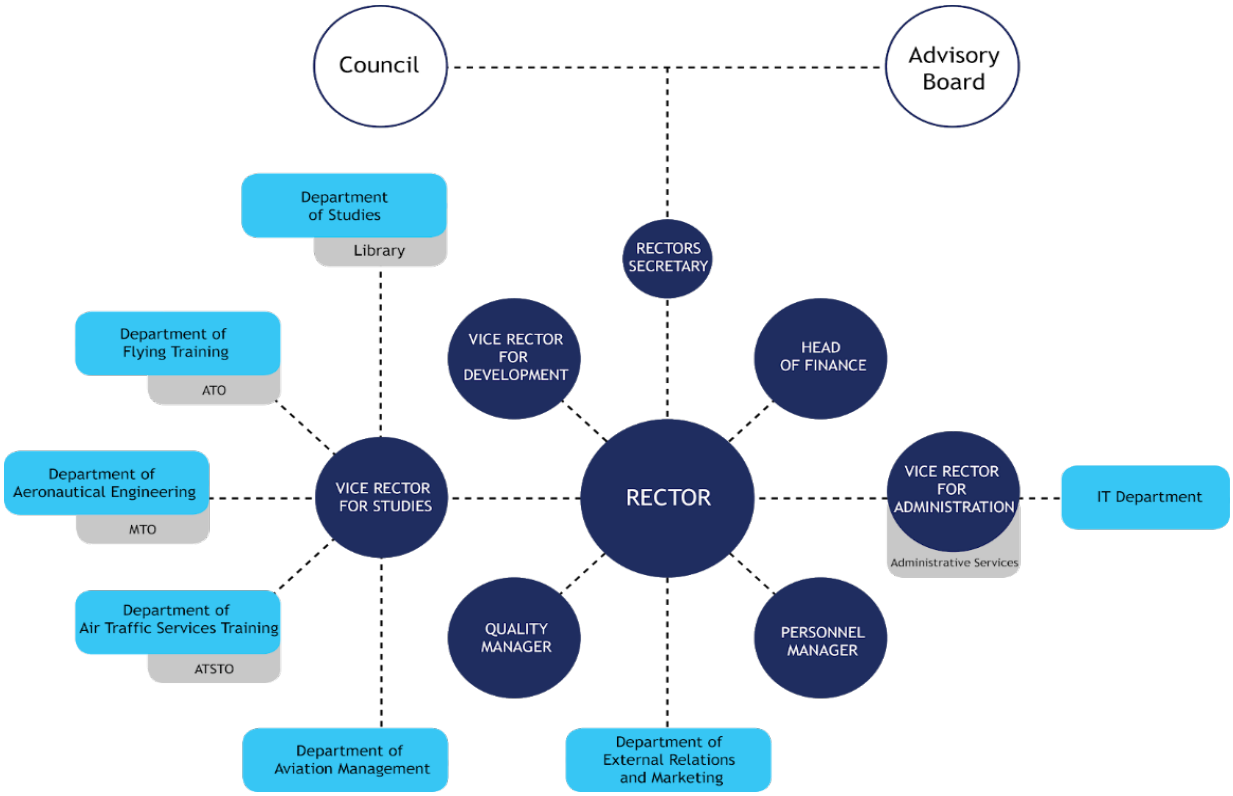

Figure 1. Structure of EAVA 2020.

As 2020 is the final year of applicability of the present SP, the Academy has initiated the work aimed at developing a new SP for the next 5-year period, i.e. for 2021-2025. The strategic planning process is led by the Vice Rector for Development and done in close cooperation with EAVA's staff, students, Advisory Board and other stakeholders. We hope to finalise this task by November 2020 in order to plan 2021 activities based on the new SP. Much attention is paid to the development of new services, e-learning, public relations and marketing, additional funding mechanisms, maintaining an up-to-date technical base, increasing competition per seat, progress in advancing interdisciplinarity etc. It is worthwhile to mention that by involving students, staff and stakeholders, we intend not only to get an adequate set of ideas for improving the Academy and its services/activities but also to raise the level of participants' awareness of the content of the SP. Direct involvement in the development process will also lead to the higher overall devotion of staff, which is necessary for its successful implementation throughout the 5-year period. A kick-off meeting marking the start of SP development was held on 3 June with the vast majority (*ca* 90%) of the Academy's employees as well as a reasonable representation of students. Their opinions on future developments were gathered as valuable input for the new SP.

Strengths:

- Strong connection and effective cooperation between EAVA and the aviation sector.
- All training organisations and technical systems (simulators) certified in accordance with European common aviation standards, ensuring the highest quality of teaching.
- Competent academic staff.
- High quality of training ensuring graduates' high employment rate.
- Small and flexible school, allowing a personal and student-centred approach.
- Highly practical education due to the involvement of many practitioners – specialists and managers from several aviation enterprises involved in teaching process.
- Well-functioning system of practices.
- Contemporary learning conditions/environment.
- Effective cooperation with other universities.
- Good reputation of EAVA.

Areas for improvement and future development activities:

- Strengthening relations with other educational institutions in Estonia and abroad.
- Internationalisation – attracting international students and academic staff and increasing engagement in international cooperation.
- Developing a distance learning (e-learning) environment.
- Development of new services.
- Communication and marketing.
- Finding additional funding opportunities.
- Keeping the Academy's technical base/laboratories up to date.
- Popularising aviation education.
- Integrating studies and R&D activities.

3.2. Resources

3.2.1. Human Resources and development thereof

Management of Human Resources at EAVA follows the goals outlined in the EAVA Development Plan 2016-2020 and focuses on the following: 1) finding a professional and competent workforce (attracting staff); 2) maintaining the satisfaction and motivation of the staff (preserving current staff); 3) continuously developing the competencies of the staff (increasing the efficiency of the staff).

As of 31 December 2019, EAVA employed 55 persons (including four on parental leave) – 35 full-time and 16 part-time. The EAVA structure lists 16 academic positions. In addition, around half of the non-academic staff is involved in teaching. Top specialists, practitioners and visiting academic staff both from Estonia and abroad are involved in teaching and development. In 2019, 17 non-academic staff members and 35 top specialists from companies or partner educational institutions as visiting lecturers were engaged in teaching. Figure 2 displays the changes in the proportion of academic and non-academic staff. EAVA employs 32 men and 19 women. The low number of academic positions is due to the small size of the Academy and the specificity of specialities: it is difficult to provide a full workload for speciality academic staff. However, pursuant to the goals outlined in the Development Plan, the trend is to engage more non-academic staff in teaching. Thus, the teaching competence of non-academic staff is to be developed, providing them with the possibility to switch to an academic career path in the future. A non-academic staff member whose teaching load exceeds 200 hours per year is set to become an elected member of academic staff. In 2020, the plan is to guide two non-academic staff members towards the competitive selection of the academic staff.

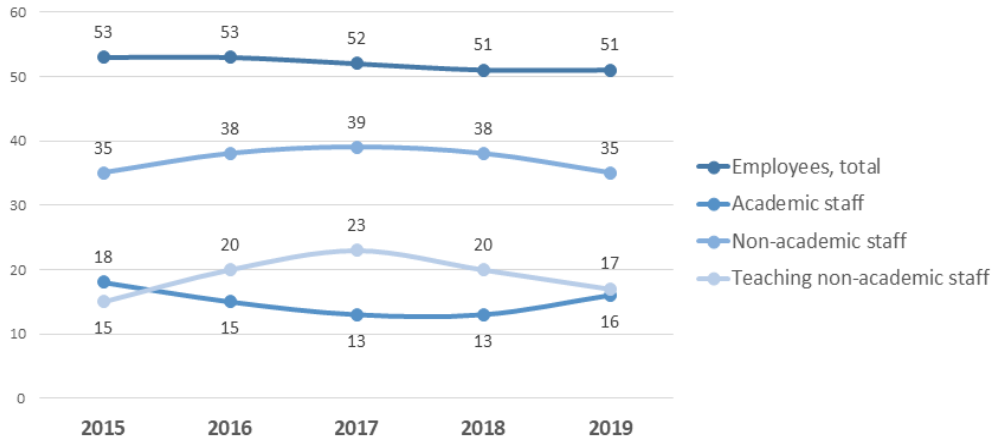

Figure 2. Trends in the number of academic and non-academic staff (2015-2019).

Finding a professional and competent workforce. To map **personnel recruitment needs**, the Personnel Manager gets the necessary input from the head of the department. Filling up academic positions is regulated and based on the Statutes of the academic employee and the Procedure for establishing and filling the position of an ordinary academic employee (Est). Selecting, appointing and evaluating members of the academic staff, their previous teaching experience, experience in research and development or other creative activities (*hereinafter referred to as* R&D), student feedback, participation in cooperation networks and self-development trends are taken into consideration (see EAVA Conditions and procedure for evaluating academic staff and assessing compliance with qualification requirements (Est)). An academic employee may move along a career path that lays the groundwork for development and incentive schemes. In certain cases, when filling designated positions, apart from the EAVA internal regulations as regards general recruitment and selection, the requirements laid down in the manuals of aviation training organisations are to be considered. These documents stipulate that to hold a designated position, the member of academic staff has to be confirmed and authorised by the Civil Aviation Administration. The scarcity of candidates at several aviation position competitions arises from the specificity of the field; thus, human resources are limited. Problematic future academic staffing arises from the specificity of the aviation industry – graduates prioritise jobs in the operational sector. EAVA cooperation partners as employers are also active recruiters and several students receive a job or an employment offer before graduation. The Academy has acknowledged that meeting the future academic recruitment need is an issue. EAVA will map alumni preparedness to teach and identify incentives to motivate them. It is necessary to find more ways

to engage students in teaching activities, e.g. conducting seminars or managing projects, organising workshops, participating in admission campaigns.

Non-academic staff are recruited according to the EAVA Recruitment Procedure (Est). The Academy organises a public or internal competition to fill a vacant post. The public competition is advertised in various job advertisement portals, on the EAVA homepage, on social media and on relevant mailing lists (alumni, students, schools' career lists). Internal staff movement between jobs is also supported. Visiting academic staff are recruited by invitation. They are usually employed under a mandate agreement. An employee's immediate superior and the Personnel Manager support the induction of a new employee. The new staff member is familiarised with EAVA's organisation of work, teaching and learning activities, digital solutions, communication principles, motivation system, etc. (EAVA Procedure for employing staff and terminating employment relationships.) New members of academic staff are obliged to complete a comprehensive teaching skills development programme.

Keeping staff satisfied and motivated. Staff Satisfaction Surveys (*hereinafter referred to as* **SSS**) have been carried out at the Academy biennially since 2011. Since 2015, surveys have been carried out with consultation firm Fontes. From year to year, the number of respondents has increased, reaching 100% in 2017 (see Figure 3). As a rule, a response rate over 70% is considered good and EAVA has reached this rate every year.

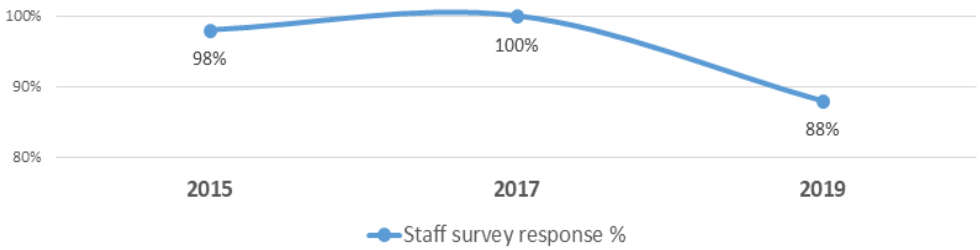

Figure 3. Staff Satisfaction Survey response rate (2015-2019).

From 2015-2019, satisfaction indicators have increased or remained stable in most categories. A comprehensive overview of staff satisfaction trends is given in Appendix 9.

The 2019 survey demonstrated that for the third consecutive year, the staff was most satisfied with the **working conditions** (**5.38 points on a 6-point scale**), **immediate supervision** (**4.71**), **organisation of work** (**4.67**) and **personal development** (**4.54**). These figures correspond with the oral comments: working conditions, field of work, colleagues and, in particular, flexible organisation of work (opportunities for distant work, flexible working hours, independence in planning work) have been repeatedly singled out. Satisfaction with immediate supervision has dropped slightly, although the aggregate score remains high. In general, it is perceived that managers are ready to offer support, if necessary, and the immediate superior implements subordinates' ideas and treats them equally. The decision-making speed, change management and problem solving of top management are assessed slightly more critically. Feedback on satisfaction with chances for personal development highlighted very diversified training opportunities and empowerment. Satisfaction with the flow of information is good (4.49). Information necessary for employees' work is for the most part available and understandable. The positive trend is to share knowledge and skills with colleagues. Further attention is to be paid to the development of channels and forms of internal communication. A downward trend is seen in satisfaction with **general governance (3.79)** and **cooperation (4.29)**. Satisfaction with **remuneration (4.00)** has also decreased. A decline in satisfaction with general governance is associated with the quick decisions taken by the administration to change the composition of staff and reorganise the structure of EAVA. The staff is looking forward to more open and justified decision processes. In

remuneration, the competitiveness of remuneration (influenced by aviation salary level) is more critically assessed. According to the recent SSS, feedback systems and forms (to improve the flow of information and cooperation between departments and the flow of information from managers to employees), the remuneration system and decision-making processes (more efficient, faster and transparent decisions) need to be developed. **All employees are briefed on the SSS results** at a seminar; reports are available on the Intranet. Feedback is analysed and **corrective measures are planned**. A relevant working group comprising staff from several fields was set up in 2019. Ideas and proposals from the working group serve as input for the following: 1) analysing the distribution of the workload and remuneration of academic staff, which led to the use of more transparent and flexible workload sheets; 2) revising remuneration regularly; the most recent salary increase was in 2020; 3) introducing a new Intranet and homepage (2019) in order to improve EAVA's external image and internal communication; 4) improving management quality using specialised training programmes; 5) improving the motivation and recognition system. More attention should be paid to improving interdepartmental cooperation capabilities, the openness of decision-making processes and staff engagement.

The EAVA motivation system is continuously developed. Relevant activities target **a fair and transparent remuneration system** as well as a diversified set of benefits, bonuses and non-financial motivators. In 2015, the quarterly performance pay was abolished and a payment class system and rates by position were established. In 2018, new EAVA Salary Rules (Est) entered into force. Academic and non-academic positions were assessed and **a salary scale of positions** was introduced. The salary system differentiates between categories of positions based on the structure of EAVA, the complexity of job assignments and the responsibility and requirements posed to the employee. Each category of the position on the salary scale corresponds to a grade (minimum rate of basic salary). In addition to the basic salary, an employee may receive **various bonuses**. These are mostly linked with **conducting continuing training** and **taking part in development activities**. In 2016, **an annual performance assessment** was introduced using key performance indicators. The annual performance pay may be 50-100% of the employee's monthly basic salary depending on their performance. Basic salaries are revised annually during the budgeting process. Depending on labour market trends and budgetary funds, **the salary fund grows on average by 5-10% a year**. Similar remuneration principles apply to visiting lecturers employed under a mandate agreement, where, to a certain extent, aviation salary trends are considered, as it is important for EAVA to involve top industry specialists in teaching. In certain fields, the Academy has employed two or three top specialists from the aviation operational sector as instructors or assistants, whose salaries significantly raise the average of the academic rank. Various bonuses and performance pay raise the average pay of the academic staff. Members of academic staff who participate actively in development projects and carry out continuing training receive various bonuses in recognition and support of their work. Thus, it may be justified that an assistant's average remuneration is higher than that of a lecturer or an associate professor.

Compared with its partner educational institutions, EAVA academic staff get competitive salaries. Table 5 displays the trends in the average salary of EAVA staff compared with the Estonian Academy of Security Sciences (EASS), the Estonian Military Academy (EMA) and Tallinn University of Applied Sciences (TUAS).

Table 5. Average salaries of academic staff at EAVA, EASS, EMA and TUAS as of 31 December 2016 and 2019 **.**

	EAVA		EASS		EMA		TUAS**	
Academic rank	**2016**	**2019**	**2016**	**2019**	**2016**	**2019**	**2016**	**2019**
Professor	2237	-	-	-	-	-	-	1991
Associate Professor	1989	2234	1897	-	1600	2100	1752	1763

Lecturer	1788	2361	1756	1964	1879	2059	1663	1654
Assistant	1575	2376	1515	1669	1468*	1600*	1683	1475
Instructor	5486	5716	-	-	1460	1563	-	-

*Teacher

**As of 1 September 2019, the Lääne-Viru Professional Higher Education Institution was merged with TUAS. Therefore, the average salaries decreased to some extent (assistants, lecturers).

It is important for the Academy to **recognise and acknowledge its staff**. The highest title of recognition is that of an **Honorary Member**, which acknowledges long-term and significant contribution to Estonia's aviation, aviation education and the development of the Estonian Aviation Academy. The title of Honorary Member has been awarded since 2013 and, as of today, the Academy has seven Honorary Members. EAVA rewards excellence in teaching by annually awarding the title of **Best Lecturer of the Year** (the Statute of the EAVA Best Lecturer of the Year (Est)). To recognise good teamwork, a supportive and helpful attitude and Academy values, the **Good Colleague of the Year** is selected annually. To acknowledge service longevity at the Academy, members of the academic staff are awarded Service Pins. The Silver Pin is awarded to staff who have a work record of 10 to 14 years at the Academy, the Golden Pin to staff members who have worked for 15 or more years at the Academy.

Pursuant to the EAVA Development Plan for 2016-2020, personnel management has focused on the **continuous development of staff competences**, including staff teaching skills, didactics, digital competence and leadership competences (see Section 3.6). Specific competencies are developed and experience is exchanged at **external trainings and conferences** as well as by participating in **mobility programmes**. To enrich work experience, staff members may undertake a **traineeship with the Academy's cooperation partners**. Teaching, digital and managerial competency training, in particular, is centrally organised. Input for organising training events comes from **performance reviews**. In 2017, the system of performance reviews was improved and **an employee personal development plan** was introduced, within which job-related and self-development goals for the next three years are agreed upon. Since 2018, **PlanPro software** has been used to conduct performance reviews. From 2014 to 2016, **a mentoring programme** for new academic staff was operational. Five mentors supported mentees in developing teaching competences and adjusting to the organisational culture of the Academy. The mentoring programme has been relaunched in 2020. In preparing the training budget, staff training needs and the appraisal of competences are taken into consideration. As a rule, a lump sum for training (1000-2000 euros per person on average) is calculated for each employee for the financial year.

3.2.2. Finance management

The EAVA budget is prepared based on the goals of the Strategic Plan and budgetary resources. The Strategic Plan comprises the following principles: EAVA is a successful organisation combining state activity support with its own revenues received from teaching and economic activities; development is ensured by optimising activity and increasing own funds. The Academy manages its financial resources pursuant to the following procedures: Procedure for preparing, approving, implementing and amending the consolidated budget (Est), Procedure for using national budgetary allocations and revenue received from economic activities (Est), Procedure for acquiring assets and accounting for them (Est), Public Procurement Procedure (Est).

Table 6. Budgetary dynamics (2016-2019).

I Revenue				
Source of revenue	**2016**	**2017**	**2018**	**2019**
State activity support	3,208,909	3,144,741	3,215,680	3,444,154
External support	64,580	92,115	271,462	208,253

Own revenue	612,963*	643,251	286,492	214,733
Total	3,888,468	3,882,124	3,775,652	3,869,159
II Expenses **Expenses by account group**				
Education allowances, grants	82,868	48,301	69,057	69,460
Labour costs	1,684,671	1,989,974	1,887,062	1,979,592
Administrative costs	1,738,242	1,781,941	1,664,143	1,655,396
Investments	117,192	86,938	158,171	101,576
Total	3,622,973	3,907,154	3,778,433	3,806,024

*including balance from previous years of €282,120

3.2.3. Infrastructure and IT development and management

Infrastructure. EAVA conducts teaching and studies in the study centre of the Academy (since 1 September 2011), the hangar (leased since 23 January 2012) and the UAV lab (opened on 13 April 2017). The share of teaching conducted in the study centre has been continuously increasing. To meet the ever-growing need, the assembly hall is used for classes and some offices have been refurbished as lecture halls. Study materials are available for students and personnel in the library. More information on the library can be found in Section 3.10.6.

During the programming period from 2014-2020 of the EU Structural Funds, the Academy has used funds from the activity 'Institutional development programme for R&D institutions and higher education institutions (ASTRA)' to develop an ATC-simulator, create UAS simulation capability and develop simulator software to a new level. Funds from this measure were also used to acquire a GNSS simulator for the Communication and Navigation Lab and monitoring platforms for the UAV lab in order to carry out teaching and development.

Synthetic training device EC135 FNPT MCC was acquired in the framework of Project No. 3.2.0401.14-0062 'Acquisition of helicopter STD for EAVA' in 2015. The Flight Navigation Procedures Trainer imitates the cockpit environment and its appliances and programmes enable the simulation of the functioning of the gauges and systems of a real aircraft.

Table 7. Breakdown of rooms and space.

	Study centre	**Hangar**	**RPAS lab**
Lecture halls and labs	1250 m^2	656 m^2	79 m^2
Public space and utility areas	2137 m^2	141 m^2	8 m^2
Offices	588 m^2	21 m^2	12 m^2
Total	**3975 m^2**	**818 m^2**	**99 m^2**

Throughout the years, satisfaction with the working environment has scored the highest in the Staff Satisfaction Survey (5.39 points on a 6-point scale as an annual average), students' satisfaction with the learning environment is 4.8 points on a 5-point scale.

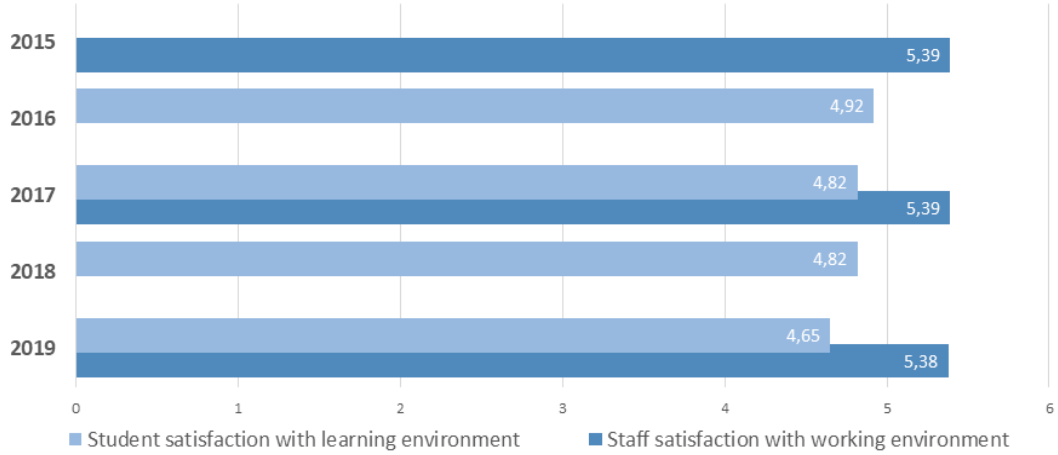

Figure 4. Staff satisfaction with working environment and student satisfaction with learning environment (2015-2019).

Information Technology. The IT Department is responsible for handling information and communication technology (ICT) issues at the Academy. Its responsibilities involve ensuring adequate IT preparedness and the operation and accessibility of the necessary support services to EAVA employees in order for the Academy to fulfil its goals and tasks. The strategic goals for the IT Department are outlined in the EAVA IT Development Plan (Est) for 2016-2020. The development plan for the next period will be compiled in the second half of 2020.

Other IT Department functions include providing technical support, maintaining the IT systems, network and hardware, planning and executing development as well as consulting other departments on their ICT issues and needs. Simulators (aeroplane simulator, helicopter simulator, UAS simulator, ATC simulator) are handled as autonomous systems and the IT Department is responsible for the dependability/operational reliability, development and improvement thereof. The ICT needs and development areas of the Academy are sufficiently financed to meet the organisational needs. One of the ICT development focus areas currently and in the upcoming years will be distance learning. The IT Department will improve technical solutions to offer academic staff the opportunity to improve the courses with distance learning capabilities. These solutions will enable staff and students to teach and learn in lecture rooms and simultaneously use e-learning technology.

3.2.4. Internal and external communication

The Department of External Relations and Marketing is responsible for EAVA's internal and external communication. The Academy has adopted principles of internal and external communication based on the needs of target groups. According to the survey on the reputation of universities conducted by Kantar Emor in 2018, the spontaneous awareness of the Academy has recently increased (2016 – 1%; 2017 – 5%; 2018 – 7 %). Awareness peaks in the 15-19- and 15-24-year-old age groups.

External communication. Target groups in EAVA's external communication are potential entrants, cooperation partners and employers, potential participants in in-service training courses, alumni and the wider public. The primary external communication channels are the EAVA homepage, the newsletter and social media (Facebook, Instagram). Dedicated mailing lists are used to inform cooperation partners, air carriers and alumni.

The EAVA homepage is in Estonian and English. The homepage covers all services the Academy provides (study programmes, continuing education, lease of premises, use of simulators and other labs, etc.). The Academy's marketing team is responsible for correct and up-to-date information. In 2019, the homepage underwent a complete overhaul in order to create a more easily

understandable layout for users. The visually more appealing homepage better communicates the core of the interesting specialities taught at EAVA as well as other activities. The more responsive web page is automatically usable on various devices and its functionality is better: more possibilities to use videos, web forms and other apps. Another significant information channel, apart from the homepage, is the EAVA Newsletter, which is published five to six times a year. It covers essential information on admission, free courses, Open Doors Days, becoming a Student Shadow, etc. Subscription to the Newsletter is voluntary; thus, subscribers are interested in aviation and are potential entrants into the Academy. During the annual admission campaigns, EAVA works with advertising and media agencies. Feedback from entrants and first-year students is used to make campaigns ever more successful. The marketing campaigns have been effective as proved by the stable competitive admission figures (see Section 3.8.2).

Internal communication. The Academy has a staff mailing list in order to quickly disseminate relevant information on the Academy (minutes of the meetings of the Rector's Office and the Council, significant events, staff movements, training events, etc.) among all employees. The mailing list includes all EAVA contract staff. Based on the Staff Satisfaction Survey (SSS 2019), e-mail is the most important internal communication channel (5.87 points on 6-point scale). Another essential channel is the Intranet. In summer 2019, the Intranet was also completely overhauled and now has better information architecture. It responds automatically to mobile devices and displays all primary quick links to the Academy's more important information systems necessary for work. According to the SSS 2019, the importance of the Intranet scored 3.51 points on a 6-point scale, whereas satisfaction with the Intranet was significantly higher (4.34 points on a 6-point scale). To ensure all employees' uniform understanding of internal communication and the role of each employee therein, the Principles of Internal Communication were drafted and made accessible on the Intranet. The employees have also had relevant training.

Strengths:

- Systemic and sustainable staff development, whereas activities are planned, on the one hand, based on EAVA's strategic goals and values and, on the other hand, considering an employee's needs and expectations vis-à-vis career and self-development.
- Staff satisfaction with EAVA's management/leadership, working conditions, information flow and motivation is high. It is regularly examined in satisfaction surveys. Results are analysed and used as input for improvement.
- A diverse, well-functioning motivation system. It comprises excellent self-development and learning opportunities, flexible organisation of work, various bonuses and benefits and non-financial incentives.
- The Academy's budget is stable and suffices to invest in and self-finance external projects. Budget management is transparent and focused on priorities.
- The contemporary learning environment, unique library, labs, simulators and workshops necessary for teaching.
- Very high staff and student satisfaction with the working and learning environment.
- Updated and responsive Intranet and Internet pages.

Areas for improvement and future development activities:

- To revise remuneration principles. Payment classes and grades should be revised and adjusted to labour market trends while remaining within the budgetary scope. The principles of bonus payments must be more clearly expressed and communicated.
- To improve the new employee induction programme. The immediate superior of a new colleague should have a bigger role and more responsibility in guiding and directing the newcomer.

- To re-launch the mentoring programme in order to support the adjustment of new employees to new job assignments, the team and the culture. Mentoring supports the Academy's staff on their intra-Academy career path. The mentoring programme was launched in 2020.
- To turn more attention to the communication of management decisions. The employees expect clearer decisions, guidelines and involvement. To achieve better communication, minutes from the meetings of the Rector's Office are sent to the staff mailing list. Team leaders are authorised to meet regularly with their teams.
- Internal communication is to become more proactive in order to provide information quickly and directly from the source, aiming at reducing the influence of informal information sources.
- To launch a programme for the development of management competencies. The aim of the programme is to develop and harmonise managerial competencies such as leadership, coaching leadership, motivating people, negotiation skills, change management.
- Constant work (i.e. finding extra funding for large-scale investments) on using innovative solutions in teaching activities (i.e. infrastructure and training equipment that takes future needs into account).

3.3. Quality culture

The Estonian Aviation Academy, governed by education and aviation legislation, operates in a way that ensures compliance with training requirements and the sustainable validity of the certificates of training organisations. To achieve the established goals, the Academy has defined its core and support processes in the EAVA Quality Management Manual (Est). The Academy's quality assurance follows the principles of the Deming Cycle to plan, do, check and act.

The Academy's management structure and processes will be reviewed and changed during 2020 by the new Rector and their team. Changes are in progress and the Management Manual will also be revised.

EAVA's core processes are teaching at the level of professional higher education and vocational education, applied research and development, fulfilling the aviation sector's need for in-service/recurrent/continuous training and servicing the society. General governance (Rector and Vice Rectors) fosters and supports processes (such as quality management, personnel management, financial management, administrative management, external relations and marketing, document management, ICT management) administered by responsible specialists, respectively, keeping the core process operational. A responsible person in each field has drafted internal regulation documents which define the operational principles in the field and are revised and updated, where necessary. Any amendments to the internal regulations arise from amended legislation, changes that are essential for the Academy to operate and developments in the designated field. On 1 September 2019, a new Higher Education Act and EAVA Statutes (Est) entered into force. Internal regulations are adopted by a Directive of the Rector or Resolution of the Council.

Development trends and goals for the Academy, provisions arising from the Republic of Estonia Higher Education Act (and the Aviation Act) and tasks set forth in the EAVA Statutes and the Activity Support Directive of the Minister of Education and Research are considered, discussed in teams and established in the Strategic Plan. The achievement of EAVA's goals is evaluated once a year when the Annual Report (Est) is drawn up. Twice a year, the Academy reports on its progress to the Advisory Board, which comprises representatives of employers, and takes into consideration the Board's proposals in setting goals. The development of study programmes is an integral part of the study process. To amend study programmes, Study Programme Councils are involved and therefore both employers and students can make their voice heard.

The EAVA Strategic Plan for 2016-2020 comprises three main goals: teaching, development and sustainability achieved through an efficient management system. To ensure the sustainability of the Academy, management processes must be optimised and development goals set in such a way that ensures development of the organisation in compliance with stakeholders' expectations. The management system is revised and changes are made while drawing up a new strategic plan.

The EAVA quality management system lies in the core values of the Academy as well as in personnel development and training. The quality management system aims at supporting the more efficient and systemic management of the Academy and ensuring compliance with requirements. It encompasses the implementation of the principles of quality management in all departments in order to achieve the goals the Academy has set and ensure aviation safety and stakeholder satisfaction. Explicitly defined fields of activity and the responsible persons thereof as well as the inclusion of all EAVA employees will help the Academy develop and provide feedback to the management in order to continue improving the quality management system.

The Academy's four core values and five teamwork principles are related to the values highlighted in the Estonian Code of Conduct for Research Integrity, such as freedom, responsibility, honesty and objectivity, respect and caring, justice, openness and cooperation. In addition to EAVA's general values, aviation training organisations adhere to manuals signed by the Rector which outline management and safety policy: we are committed to meeting legal requirements and ensuring the necessary resources, persons and documents to conduct training, we notify of hazards and problems so that no one will be blamed or punished for them. The safety policy is based on the internationally agreed Just Culture in Aviation Safety principles. The beliefs, values and attitudes of EAVA's employees and students help guarantee safety and prevent dangerous situations in aviation. It is important to make decisions and act in compliance with Just Culture: the principles of dedication, justice, information, awareness, desire to learn, flexibility and conduct. The intentional breach of rules is not acceptable.

The EAVA document management system upholds the functioning and administration of the quality management system. In 2018, document management was consolidated and transferred to the Estonian Education Information System EKIS. Feedback on the achievement of EAVA's goals is received by regularly assessing how departments complete their work plans and analysing the achievement of objectives and setting new ones during performance reviews with staff.

The Estonian Quality Agency for Higher and Vocational Education (EKKA) assesses the conformity of the EAVA study process with educational requirements. EAVA passed its institutional accreditation and was awarded the EKKA quality label, valid until 5 February 2021. The Academy passed the quality assessment of a study group in 2016. The Estonian Civil Aviation Administration (ECAA) regularly assesses the compliance of the training provided by EAVA with international aviation requirements. The ECAA has confirmed compliance and issued the following training certificates:

1. Air Traffic Services Training Provider (ATSTO) Certificate No. 4.7-13/14/001.
2. Approved Training Organisation (ATO) Certificate No. EE/ATO/001.
3. Maintenance Training and Examination Organisation (MTO) Certificate No. EE.147.0001.

4-6. Flight Simulation Training Device Qualification Certificates for aeroplane and helicopter (FNPT II MCC) No. EE-STD/001, No. EE-STD/002, No. EE-STD/003.

Quality is assured by the manuals of aviation training organisations and the compliance of teaching with relevant requirements. The performance of the management system is evaluated once a year at an annual assessment meeting in January: the achievement of the objectives set for the previous year are analysed and objectives for the next year are established. The performance of the management system of aviation training organisations and compliance with the requirements thereof is checked by the internal audit system and regular supervision by the

ECAA. Shortcomings identified by audits are analysed, the significance of the shortcomings is acknowledged, responsible persons are appointed and deadlines for corrective actions are set. As regards the 2019 audit, corrective actions have been implemented and findings disclosed. The shortcomings identified by ECAA audits have been resolved.

A significant component of the quality assurance system in higher education is feedback: information received from internal audit reports of aviation training organisations, stakeholders' satisfaction surveys, precepts by the ECAA and oral feedback. To ensure and develop quality assurance, feedback is gathered from cooperation partners, employees, students and alumni in order to take their recommendations for improving learning and teaching into consideration. Lecture observations provide feedback to the academic staff and are carried out according to the procedures and the results are documented.

Once a semester via the SIS, the students evaluate the subject courses and the level of teaching with the aim of receiving regular feedback. This evaluation serves as one of the cornerstones of ensuring the quality of studies. Student surveys give the academic staff and the academic structural units consistent feedback on the study process. Academic staff members can use the outcomes of the surveys to make improvements to their teaching and perfect the content and format of their subject courses. The outcomes of the surveys are also used when evaluating the suitability of an applicant for the position of academic staff member. The student survey system is being developed to increase the number of student respondents and ensure greater reliability of the data. In 2019, Google Forms was used for surveys. Student surveys were carried out by speciality. The number of respondents is slightly increasing. The results were presented to the students; what had been done based on the results was explained to them.

The Academy actively participates in the quality development undertaken by the Estonian Rectors' Conference of Universities of Applied Sciences. The primary topics discussed include the common development trends of professional HEIs, such as how to define quality. They are outlined in the 'Vision Document of the Estonian Rectors' Conference of Universities of Applied Sciences – Professional Higher Education in 2035'. The Vice Rectors working group within the Conference keeps quality development in constant focus. The most important topics include:

1) planning a joint training event in 2020 for academic staff and heads of study programmes to promote interaction and the exchange of experiences between academic staff from different HEIs – 'Sharing Good Methods and Best Practices'
2) the seminar 'Internal Evaluation in the Context of Institutional Accreditation'
3) the discussion 'Procedure for Academic Staff Accreditation in Different Professional Higher Education Institutions'
4) the discussion 'Teaching in a Foreign Language'
5) exchanging experience in e-learning

Strengths:

- Dedicated field specialists who are committed to developing the Academy and the inclusion of significant stakeholders to set and develop the goals of the Academy.
- Regularly revising and updating the management system of the Academy to ensure adherence to education and aviation regulations.
- The established certified management system of training organisations.
- Regular internal and external evaluations that provide useful feedback for improvements and the corrective and preventive actions recorded in the documentation system and managed by responsible persons.

Areas for improvement and future development activities:

- To communicate changes in the management system in a more open and direct way to the staff.
- To present the results of satisfaction surveys to stakeholders and increase the number of respondents.

- To revise the Academy Management Manual.

3.4. Academic ethics

EAVA employees are obliged to adhere to the principles of academic ethics. This obligation is established in both employment contracts and the Rules on Organisation of Work (Est) adopted by the Rector's directive. A new employee is familiarised with the *Rules*. Amendments to the Rules are notified via EKIS. Each employee is obliged to confirm that they are aware of the Rules. The Rules on Organisation of Work comprise provisions such as a commitment to avoid conflicts of interest and corruption; loyalty; proper use of the employer's resources; a ban on accepting bribes and a responsibility to be objective. It is understood that the Academy as well as its staff consider each other's interests and avoid any behaviour detrimental to the other party. By agreeing with the Rules on Organisation of Work, the employees commit themselves to adhere to the Academy's values, principles, norms and ethics and principles of prudence and good faith. Adoption of the ethical approach and fulfilment of the society's needs and expectations as operational principles are also included in the EAVA Quality Management Manual. Five teamwork principles (see Section 3.1.2) foster adherence to academic ethics and are related to values such as freedom, responsibility, honesty and objectivity, respect and caring, justice, openness and cooperation, which are set out in the Code of Conduct for Research Integrity.

The principles of organisation of work set out that the immediate superior must be notified of any conflicts of interest in order to take further steps to avoid the conflict. In the case of a corruption threat, employees are obliged to inform the EAVA corruption prevention coordinator, who will check the case and involve investigative bodies, if necessary. Work-related differences are expected to be resolved within the Academy, politely and with mutual respect. External help will be requested if talking to the management yields no result or if the parties are justified in believing that any such discussion may be futile.

The Academy expects all students to follow the well-known principles of academic ethics; however, separate from this, the Study Regulations regulate students' ethics and adherence to the principles of good conduct, describing breaches of academic integrity as well as the handling thereof. A breach of academic integrity includes cases such as plagiarism, document forgery, impermissible conduct during knowledge check (use of materials not allowed, exchange of knowledge, substituting for another student in knowledge check), dishonourable acts during practical training, repeated failure to attend flying training at the scheduled time without valid grounds and other improper conduct unbecoming for a learner expressed as gross disrespect towards the Academy or the generally accepted rules of conduct.

In aviation, ethical conduct and adherence to rules are essential for aviation safety. This message is explicitly delivered to students during both admission and studies. Students have to pass a background and criminal history check before they can attend practical training on the territory of the airport. Instructors and practical training supervisors monitor students' adherence to procedures and assess compliance with safety requirements. Employers value ethically behaving students and wish to employ them.

Since 2018, the Academy has used URKUND, a plagiarism checking system used to detect cases of plagiarism. Before URKUND, Kratt was used. The academic staff monitors students' independent work in order to prevent and draw attention to cases of plagiarism. The EAVA Procedure for Graduation Theses (Est) allows students to check the authenticity of their theses with the URKUND anti-plagiarism system. Speciality departments, graduation thesis supervisors from the Academy and consultants help carry out the check.

To resolve cases of dishonourable conduct, the student and a member of academic staff must first discuss the matter. In some cases, a representative of the speciality department participates in the

meeting. In the case of non-agreement, the Vice Rector for Studies is involved. The final solution may be either an agreement between the parties or a reprimand. To handle cases of plagiarism, the Rector sets up a designated committee by their directive; the committee also comprises a representative of the Student Council. The committee is authorised to investigate all plagiarism-related issues in a comprehensive and objective way, listen to the learner's explanations and make a decision. A more severe consequence for dishonourable conduct is the removal of the learner from the matriculation register. The learner is removed from the matriculation register by the Rector's directive on the proposal of the Study Department.

It is not possible to single out statistics on academic fraud. In cases of academic fraud, the EAVA procedure provides that, first, a member of academic staff resolves the case with the student. The case will be transferred to the committee only if the parties are unable to agree. During the period under review, the committee has been convened only once.

To settle complaints or problems, students directly contact the speciality department or the staff of the Academic Affairs Office as well as the Rector. As the Academy is a small organisation, it is possible to communicate face to face and at the level of persons; therefore, concerns are resolved quickly and in direct communication. Students can also report their concerns to the Student Council. The Study Department and the Rector meet regularly with the Student Council in order to discuss relevant issues. Students in pilot training have a dedicated reporting system which also accepts paper-based reports. The students prefer to contact the staff directly to resolve problems.

Section 8.10 in the Study Regulations details the conditions and procedure for contesting decisions in matters of organisation of studies. If a learner would like to contest a decision in matters of organisation of studies, they will address the decision-maker and explicitly express their intent to contest the decision. To resolve concerns, employees directly contact their immediate superior, the personnel manager, the quality manager or the Rector. The Academy is a small organisation, the employees know and support one another and current issues are resolved on a continuous basis without recording them.

Strengths:

- The Academy has defined its ethical principles for the staff in the Rules on Organisation of Work, job descriptions and employment contracts and for students in the Study Regulations.
- The Academy ensures the equal and fair treatment of the staff and students through direct individual communication.

Areas for improvement and future development activities:

- To develop principles of the management of complaints and academic fraud and upgrade the Study Regulations with relevant additions.

3.5. Internationalisation

During the period under review, two strategic documents have primarily guided the internalisation of the Estonian Aviation Academy – the EAVA Development Plan for 2016-2020 and the resultant EAVA Strategy for Internationalisation 2016-2020. Both documents establish general objectives and the necessary activities to achieve them. Each activity has key performance indicators set for 2016, 2018 and 2020. Annually, the foreign relations specialist reviews and analyses the indicators involving the management. The objectives have mostly been achieved. Some too optimistic objectives have not been achieved. The basic orientations in internationalisation for the period 2016-2020 are:

1. Internationalisation of teaching, studies and R&D with external partners
2. International cooperation with new and current external partners
3. Development of an environment supportive of international cooperation
4. Adequate funding of international cooperation activities

EAVA has international cooperation agreements with 20 higher education institutions in 17 European countries. In addition, international cooperation takes place with organisations offering students traineeships abroad and companies with which no long-term framework agreements have been concluded (see Section 3.1).

Long-term student learning mobility within Erasmus+ has been operational since 2008, allowing students to study and have practical training abroad. During the period under review, 28% of the participants in learning mobility went to the Netherlands, 20% to France, 14% to Latvia (practical training) and 11% to both Spain and Belgium. Other countries were less frequently chosen. Most of the Erasmus learning mobility participants are students from the Aviation Management study programme, as this programme is the most flexible. In March, a competition for an Erasmus grant takes place, followed by interviews to find the most appropriate foreign HEI and subjects and analyse the optimum study arrangements in order to continue studies. Applications for traineeships are accepted throughout the year, as it is difficult to find companies for practical training and each experience is valuable. All students get Erasmus grants and, if necessary, additional means-tested support. If students keep a blog reflecting their experience during learning mobility, they will be paid for this. Blogs are uploaded on the EAVA homepage. They have inspired several students to choose learning mobility destinations. To consider the knowledge acquired during learning mobility in the completion of the study programme, the Academy examines to what extent learning outcomes correspond. Studies during learning mobility may be considered subjects prescribed by the study programme, practical training or optional subjects. Thus, all learning outcomes achieved during the learning mobility period are applicable to further the completion of the study programme. All EAVA study programmes include an optional course module. Its volume has been significantly increased since the last accreditation. The aim of the module is to allow students to develop themselves in the desired direction. Should the students wish, they may study subjects prescribed by the study programme prior to learning mobility or independently during learning mobility. The standard duration of studies is extended by the period of learning mobility.

Students hear about learning mobility during admission interviews and later in the dedicated briefing for first-year students, followed by an additional briefing in November and our ‘Exchange of Experience’ event, where students who have participated in learning mobility share their experiences. In February, dedicated briefings for second-, third- and fourth-year students take place. Members of the academic staff and employees who have participated in mobility programmes encourage students to join learning mobility. Suitable timing for learning mobility varies by study programme. In Aviation Management, all years of study are appropriate, whereas in other study programmes, certain years and/or semesters are best suited to learning mobility (e.g. periods with fewer compulsory courses prior to speciality studies).

The Academy also offers students short-term learning mobility. For example, for years, students from the Air Traffic Service speciality have undergone their familiarisation practice in Air Navigation Services Finland Oy and students from Aircraft Piloting have undergone familiarisation in A/S Air Baltic Corporation headquarters in Riga, Latvia. In 2018, the Academy supported the participation of students from the Communication and Navigation Systems speciality in the CERN Spring Campus informatics study days in Riga. In 2019, the best students could attend the World ATM Congress 2019 in Spain. EAVA is committed to supporting similar short-term learning mobility in the future, as it is important to offer students a variety of possibilities for learning mobility of a suitable nature and duration.

Table 8. Participation of students in learning mobility.

	2014/15	2015/16	2016/17	2017/18	2018/19
Students	276	256	251	234	242
Erasmus	9	12	11	12	11
Short-term learning mobility	2	1	1	22	15
New graduates' practical training	2	0	1	2	4
Participation rate (%) of the total number of students	**4.0** *(target 4%)*	**5.1** *(target 4%)*	**4.8** *(target 4%)*	**14.5** *(target 5%)*	**10.7** *(target 6%)*

According to the report on 'The participation rate of students in the Erasmus programme' drafted by the Archimedes Foundation, 23% of EAVA graduates participated in Erasmus learning mobility in 2014 and the participation rate in 2015, 2016 and 2017 was 42%, 23% and 53%, respectively. EAVA is among the top three HEIs in Estonia with these results.

According to the satisfaction surveys conducted among EAVA second- and third-year students in 2016-2017, students gave 4.6 points to gaining international experience in 2016 and in 2017. The satisfaction surveys in 2018-2019 rated different aspects of internationalisation. The possibilities offered by Erasmus gained 4.4 points in 2018 and 4.5 in 2019. Studies in English got 4.3 in 2018 and 4.0 in 2019. External academic staff received a stable 4.1 in both years. Answers to open-ended questions mostly recommended having more external academic staff.

In 2017, the Academy organised an International Day to mark the 30th anniversary of the Erasmus programme. External academic staff from Denmark, Finland, Poland and the UK made presentations on aviation education in their respective countries. Foreign visiting students briefed attendants on the organisation of education in their home countries and EAVA students spoke about learning mobility.

Foreign visiting students mostly come under the Erasmus+ learning mobility programme and they are offered learning opportunities; although in 2017, there were three traineeship cases and one was scheduled for summer 2020. As a cooperation partner of the Tartu Vocational Education Centre, the Academy has also been a traineeship venue for Erasmus+ foreign visiting students studying at the Centre: one student in 2016, three in 2017 and 2018 and two in 2019. During the period under review, 23% of foreign visiting students at the Academy were from the Netherlands, 22% from Poland, 11% from Bulgaria, 10% from Lithuania and 8% from Turkey. Foreign visiting students are received twice a year for one or two semesters. The volume of subject courses in English has reached 60 ECTS in both semesters and new subjects taught in English are added every academic year. The Academy has no full study programmes in English, but these are under preparation. Speciality studies in the Air Traffic Services study programme can be completed in English; the Aviation Management study programme includes the Aviation Company Management module (30 ECTS); the Remotely Piloted Aircraft System (8 ECTS) module is open to all EAVA students and has been taken by foreign students studying at the University of Tartu, too. Usually, foreign students study together with Estonian students.

English is the language of instruction and administration for foreign visiting students. Around 90% of the study literature in the library is in English. Foreign visiting students have highlighted that the main reason for studying at EAVA is the wide range of high-quality aviation subjects. According to the Erasmus+ feedback platform Mobility Tool, the satisfaction of foreign visiting students has been very high over the years. More than 90% are highly satisfied with the counselling and administrative support provided by the Academy, integration into EAVA daily life and the support in finding accommodation. Satisfaction with the subjects has significantly increased: they are comprehensive, up to date and easily accessible. In the academic year 2017/2018, the satisfaction rate was 92%, 69% and 85%, respectively. A more detailed overview of support measures available to foreign visiting students is given in Section 3.10.

Table 9. Share of foreign visiting students in the EAVA student body.

	2014/15	2015/16	2016/17	2017/18	2018/19
Students	276	256	251	234	242
Foreign visiting students	16	19	16	18	20
% of the total student body	5.8 *(target 4%)*	7.4 *(target 4%)*	6.4 *(target 7%)*	7.7 *(target 7%)*	8.3 *(target 7%)*

According to the internationalisation strategy, the share of external academic staff in the total teaching staff should meet the stable target of 15%. During the period under review, foreign visiting academic staff taught at the Academy both within the Erasmus+ programme and under the mandate agreement: 13% in 2016, 18% in 2017 and 20% in 2018. The share of foreign visiting academic staff has recently increased. Additionally, external academic staff, including from partner higher education institutions, have given presentations at Aviation Seminars.

The teaching employees of the Academy participate in outgoing staff mobility both within projects and using EAVA budgetary resources. In 2016, the Development Plan set a cumulative target for teaching employees who have learning mobility experience (see Table 10).

Table 10. Share of employees who teach and have participated in staff mobility programmes.

		2016	2017	2018	2019
Increase in the number of employees who teach and have participated in staff mobility as a percentage of the total EAVA staff (Erasmus+/DoRa)	Target	10%	-	50%	-
	Result	28%	37%	40%	55%

In 2014-2015, the aim was to have 10% of employees participate in learning mobility during the academic year. Staff who have multiple mobility experiences were taken into account. In 2014 and 2015, the indicators were 17% and 15%, respectively.

The Academy fully supports the professional development of the staff and teaching at foreign HEIs or various external training events. As aviation is a specific field, consistent and regular training is necessary to maintain valid aviation certificates; therefore, the volume of external staff training has been growing from year to year. In 2019, *ca* 50% of teaching employees attended external training events. The volume of training was 36.84 academic hours per employee and the cost of training 1,552.50 euros per employee. Section 3.6.2 gives a more detailed overview of academic staff development. Since spring 2018, foreign visiting students have elected The Best Lecturer at the end of each semester.

Strengths:

- Over the years, students have become more interested in learning mobility. The learning mobility programme has become more diversified and participation therein is recognised.
- The Academy participates in Erasmus+. The programme allows financial (including means-tested) support for participating students. The programme is open to all students.
- The share of foreign visiting students continues to be at the target level. Foreign visiting students' feedback on teaching and support systems has remained at a high level.
- Students and foreign visiting students are offered personalised support.
- Throughout the years, participation of academic staff in learning mobility has become more popular, whereas the involvement of foreign visiting academic staff in teaching has also increased.
- A sound and consistently developing HEI partner network, which has promoted learning mobility (for students and employees) and the involvement of foreign visiting academic staff.

Areas for improvement and future development activities:

- Although learning mobility has become more popular, it is still difficult to have practical training (traineeships) abroad for most specialities. To further promote learning mobility and more diversified traineeships, it is necessary to discover good and reliable traineeship venues abroad.
- Academic staff mobility meets its targets; however, it is not systematic. To achieve more systematic mobility, it should become a mandatory part of the staff evaluation system.

3.6. Academic staff

3.6.1. Academic staff: composition and profile

EAVA academic staff comprises the following persons who have teaching duties:

a) **ordinary academic staff/academic employees** (professor, associate professor, lecturer, assistant, instructor) are elected by the Council. Since 2020, the Academy has had the following academic staff positions pursuant to the new Higher Education Act: professor, lecturer, teacher
b) **non-academic staff who teach** at least to the extent of 3 ECTS
c) **visiting academic staff** who work under a mandate agreement

Teaching is also conducted by members of academic staff from the University of Tartu, the Estonian University of Life Sciences and Tallinn University of Technology. During the period under review, the number of ordinary academic staff has remained relatively stable. Most of the academic staff are lecturers. The share of lecturers is high because EAVA only has professional higher education and vocational education study programmes, no Master's studies. Due to the specificity of specialities taught at the Academy, aviation competences and aviation education are rated as highly significant components of the academic staff's qualifications. Thus, quite a few EAVA academic staff members (in particular, assistants and instructors) have professional higher education in aviation. However, in order to raise the quality and volume of R&D, more academic staff holding Master's and doctoral degrees should be recruited in the future. The number of non-academic employees who participate in studies and/or in-service training has been increasing from year to year. On average, 50% of non-academic employees participate in teaching. This figure was the highest in 2017 – around 60%. This upward trend continues. To diversify studies at the Academy, annually around 20-35 members of staff teach under a mandate agreement. The Academy has a longer ongoing cooperation relationship with many of these staff members. Top specialists, practitioners and visiting academic staff from Estonia and abroad are involved in teaching. EAVA cooperates with aviation sector companies and stakeholders (ECAA, Estonian Air Navigation Services, Tallinn Airport, Magnetic MRO, Air Force, Nordica, etc.). Students highly value the practical experience of the visiting academic staff and the feedback for them has been positive. Table 11 provides an overview of the EAVA academic staff.

Table 11. Breakdown of academic staff (as of 31 December 2019).

	2015	2016	2017	2018	2019
Total number of employees (excl. employees on parental leave)	**53**	**53**	**52**	**51**	**51**
Ordinary elected academic staff, including	18	15	13	13	16
Professors	1	1	-	-	-
Associate professors	1	1	1	1	2
Lecturers	8	6	7	7	10
Assistants	5	4	2	2	2
Instructors	3	3	3	3	2
Non-academic staff	35	38	39	38	35

Non-academic staff who teach (% of non-academic staff)	15 (43%)	20 (53%)	23 (59%)	20 (53%)	17 (49%)
Visiting academic staff under a mandate agreement	30	29	29	30	35
Academic staff (incl. elected academic staff, non-academic staff who teach) by qualification					
Staff with a doctoral degree (% of total academic staff)	3 (9%)	3 (9%)	2 (6%)	2 (6%)	4 (12%)
Staff with a Master's degree (% of total academic staff)	13 (40%)	15 (43%)	16 (44%)	15 (45)	15 (45%)
Staff who have higher education/professional higher education (% of total academic staff)	15 (45%)	14 (40%)	15 (42%)	12 (36%)	11 (33%)
Staff who have secondary specialised education/vocational education (% of total academic staff)	2 (6%)	3 (9%)	3 (8%)	4 (12%)	3 (9%)
Average age of academic staff (incl. elected academic staff, non-academic staff who teach)	40	42	42	44	45

Not only has the number of academic employees (expressed in full-time equivalent) been stable, but the number of students has also remained stable. In recent years, the academic staff/student ratio (see Table 12) has remained the same, around 17-18 students per one full-time academic employee (excluding other categories involved in teaching – non-academic staff, visiting academic staff). Such a work arrangement is learner-centred and allows an individual approach. It also favours practice-oriented teaching.

Table 12. Number of students per academic employee expressed in full-time equivalent (2014-2019).

	2014/2015	**2015/2016**	**2016/2017**	**2017/2018**	**2018/2019**
Number of students per academic employee (expressed in full-time work)	15.3	14.2	16.7	17.8	18.6

The average age of the academic staff has remained stable throughout the years: 45 years in 2019. The majority of staff are between 27 and 50 years of age. Younger academic staff have joined, in particular, the ranks of lecturers. There are very few younger than 30, as several academic positions require experience in teaching and/or research that younger candidates still have to acquire. The Academy will focus on recent graduates in order to meet future academic staffing needs.

Until 1 January 2020, the work of academic employees was organised pursuant to the EAVA Statutes of the Teaching Staff and the Appendices thereof. The main tasks of an academic employee are **teaching, R&D and creative work** (*hereinafter referred to as* R&D), **development of the organisation** (management tasks, participation in representative bodies, popularisation of the speciality, supporting future academic staffing) and **professional development**. Although the Statutes outline overall workloads, the compilation of the workload sheets is flexible. A heavy workload in one field can offset a reduced one in others. Thus, for example, a starting lecturer may have a lower teaching and R&D load, whereas the emphasis is on professional development. Arrangements (as workload plans) are made by the member of academic staff and their immediate superior for each academic year. In 2020, new EAVA Statutes of the Academic Employee entered into force, making calculation of the workload of academic staff even more flexible. Only the volume of teaching is fixed, whereas other tasks, such as R&D, development of organisation and professional development, have no specified volume.

Table 13. Academic employees: structure of tasks (until 1 January 2020).

	Teaching (contact hrs/per academic year)	R&D and creative work	Development of organisation and professional development
Professor	Up to 40% (at least 150, average 200-300)	At least 30%	Up to 30%
Associated professor	Up to 50% (at least 250, average 250-300)	At least 25%	Up to 25%
Lecturer	Up to 60% (at least 300, average 300-450)	Up to ~ 15%	Up to 25%
Assistant	Up to 65% (at least 350, average 350-500)	Up to ~ 10%	Up to 25%
Instructor	Up to 70% (at least 550, average 550-600)	Up to ~ 10%	Up to 20%

Source: EAVA Statutes of the Teaching Staff

3.6.2. Academic staff: development and appraisal

The EAVA Strategic Plan for 2016-2020 sets goals to ensure improvement of the academic staff's qualifications and develop teaching competences. It is more complicated to fill the positions of speciality academic staff. Due to the specific nature of aviation, subject matter experts are primarily active in operational structures (pilots, aircraft maintenance technicians, air traffic controllers, aviation enterprise managers, etc.).

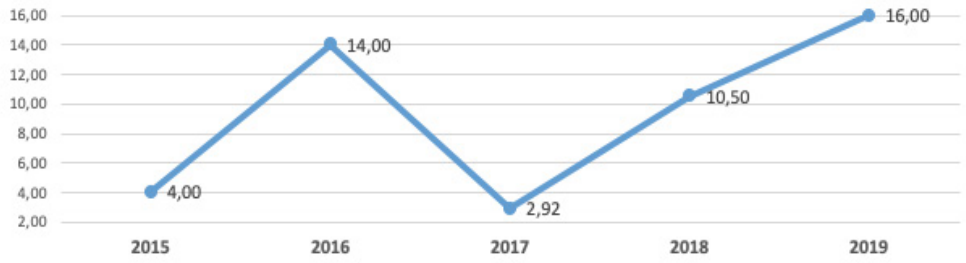

Figure 5. Average competition per academic position (expressed in full-time equivalent), 2015-2019.

In addition to public competitions, targeted offers are used to recruit external visiting academic staff in particular. Competitions to fill academic positions have been quite successful. The competition is more intense if it is advertised in an international search portal (e.g. Aviation Job Search Portal). In 2016, this approach was used to recruit an academic staff member to teach aircraft construction and maintenance. There were 43 applicants. Stronger competitions have also taken place to fill academic positions in the Aviation Management Department. Thus, in 2019, the competition to recruit an Associate Professor of Management yielded 16 candidates. Figure 5 above gives an overview of the competition for academic positions.

Promoting the development of the academic staff. The aim of personnel management at the Academy is to support the systemic and well-thought-out development of the competences of the academic staff and other employees. The development of the academic staff comprises the following targets:

1) to enhance teaching competence, develop professional capability and proficiency in English as a language of instruction and enhance the digital competence (including e-learning methodology) of the academic staff

2) to involve the academic staff more actively in in-service training and development work organised by the Academy and to promote cooperation with stakeholders

Development of the professional skills of academic staff. The staff develops pedagogical and professional competencies at various training events. Competence is managed on two levels:

1. Development of the teaching competence of academic staff is guided and supported at the central level. Academic staff members must take a comprehensive pedagogical course once every three years. A starting academic staff member must complete a detailed teaching skills development programme. The Academy has cooperated with the University of Tartu and major training companies. In recent years, a traineeship with the Academy's cooperation partners has been possible. During the traineeship, the academic staff member is relieved of teaching but still entitled to their salary. Thus, in 2018, two employees were on traineeship in the Air Force and one in EANS.
2. Development of aviation competences (incl. appropriate renewal of certificates) on the initiative of the academic staff member and under the guidance of the head of the structural unit. The academic staff attends conferences and seminars and refreshes speciality-related knowledge at external training events (IATA, Eurocontrol, JAA TO, EASA). EAVA's support for professional development is significant. Year on year, the **training volumes** of the academic staff and employees who participate in teaching have **increased**. Table 14 shows the professional development of the academic staff.

Table 14. Continuing training of the academic staff (internal and external training), 2016-2019.

	2016	2017	2018	2019
Participation in internal and external training, total volume (academic hours)	2575.32	2376.01	2348	3541
Professional development, academic staff	698.69	468.05	710.69	837.65
Training volume per participant	38.82	33.43	78.67	69.8
Professional development, non-academic staff who teach	1051.33	1004.07	1563.69	1616.65
Training volume per participant	52.57	47.82	67.99	80.83

Besides continuing training, the Academy encourages employees to take up various degree studies. The Academy allows employees to take study leave but also offers flexible work arrangements, allowing employees to maintain their salaries during the study period. In 2015, two employees were doing doctoral studies, and in 2017 and in 2019, three doctoral students each year.

Enhancements to the performance review system. In 2017, the performance review system was improved and personal development plans for employees were introduced. The plan is an integral part of the performance review. Performance reviews take place once a year. Objectives, workload sheets and work plans are reviewed, adjusted and revised annually. A **personal development plan** is devised for three years. The development plan maps the employee's job-related goals, professional development (competences, qualification) objectives and motivation over a longer period of time. Plans are aligned with the goals of the EAVA Strategic Plan and the guidelines of the Ministry of Education and Research. Performance reviews are one of the tools used to evaluate employee performance.

Development of English as a language of instruction. Most of the employees have passed the Oxford Placement Test. In most cases, the level of language proficiency met the requirements for teaching in English. The academic staff can improve their language proficiency in various language courses: this is integrated in the personal development plan. Since 2017, lecture observations for staff teaching in English have taken place. This observation is carried out by a

language expert and a subject matter expert. They analyse the lecture with the member of academic staff and come up with recommendations. Lecture observation protocols are included in the employee's personal file.

Enhancements of digital competences. Internal training supports the enhancement of digital competences (including e-teaching methodology). The educational technologist coordinates e-learning seminars, being the immediate mentor/instructor of academic staff members in e-learning issues. In addition, the academic staff attends digital competence training as required for organisation of work and teaching.

Development of cooperation with stakeholders and sharing of best practices. To enrich the life of the academic staff, the Academy offers all employees the possibility to participate in various development projects and conduct in-service training events. The volume of in-service training as well as the academic staff's contribution thereto has been relatively high throughout the years. From 2016 to 2019, academic employees have carried out 90% of EAVA-organised training courses, the remaining 10% by EAVA partners. International cooperation is also developed via mobility programmes, such as Erasmus+ and DoRa+. Section 3.5 outlines the participation of the academic staff in mobility programmes. Since 2016, there has been a cumulative target set for staff participation in learning mobility. By 2019, 55% of the staff who teach to the extent of at least 3 ECTS had participated in one of the mobility programmes.

Peer-to-peer seminars. The academic staff's peer-to-peer seminars promote intra-Academy cooperation and cooperation with stakeholders. The seminars are a place to share experiences and best practices, discuss challenges and introduce new teaching methods and materials.

Participation of the academic staff in R&D supports teaching and ensures the required competence for the supervision of students' research. Section 3.11 provides an overview of the participation of academic staff in R&D.

Student feedback and satisfaction indicators as regards studies reflect the continuous improvement of the academic staff's teaching competences and supervision skills (see Table 15).

Table 15. Student feedback on studies (2014-2019).

Academic year	2014/15	2015/16	2016/17	2017/18	2018/19
Students assessment of studies (5-point scale)	4.4	4.5	4.7	4.6	4.7

In the assessment of an academic staff member, annual **performance reviews** and a **performance assessment** make up an integral part. In the performance assessment, the work of academic staff is assessed against KPIs, such as efficiency of teaching (incl. supervision), contribution to R&D, international mobility and participation in cooperation networks. The performance assessment may lead to performance pay of up to 100% of the monthly basic salary of the employee assessed. The academic employees must undergo a regular **evaluation** every five years. The member of academic staff is evaluated in all fields of activity: teaching activity and its development (incl. students' feedback), R&D, active participation in training events, organisational culture and cooperation, participation in relevant decision-making bodies and associations, etc. A decision is made based on a self-assessment, a character reference by their immediate supervisor, workload plans, lecture observation protocols, student feedback and other documents (Conditions and procedure for evaluating academic staff and assessing compliance with qualification requirements (Est).) Evaluation results may be used to change an academic staff member's position, salary or job assessments (add, replace, etc.) and to give benefits.

Strengths:

- Top specialists and practitioners from partner companies and educational institutions are involved in teaching. They bring the best professional expertise and experience to teaching. In

addition, several non-academic employees (*ca* 50%) participate in teaching (incl. in-service training).

- The academic staff is systemically involved in professional development and training programmes to enhance their pedagogical and teaching competences and professional qualifications.
- The students' satisfaction rate with the academic staff is high, which shows the quality of teaching and supervision competences.
- The best practices acquired in organising teaching and achieving quality are learned from, disseminated and implemented.
- The diversified system of assessing the academic staff (workload plans, performance reviews, performance assessments, evaluation) offers possibilities for systemic feedback, supporting not only the development of the academic staff but also the quality system in its broader sense.
- An academic career path has been introduced, allowing the staff to move and develop in their scholarly calling.

Areas for improvement and future development activities:

- To ensure the academic succession of the ordinary academic staff. The competences and capabilities of recent students and alumni should be mapped and ways found to motivate them to get involved in teaching. It is intended to add the relevant question to the alumni feedback sheet and get the necessary input for further action.
- Although the share of academic staff with Master's and doctoral degrees meets the teaching need, it should be increased in order to enhance the quality and volume of R&D. The Academy should continue supporting the Master's and doctoral studies of employees. Contributing factors include flexible work arrangements, active and regular support by the immediate superior and a motivation system (a bonus when the degree has been defended). These systems already partially exist; however, they need to be strengthened (support and guidance by the superior, setting up a bonus system).
- Development of the mentoring system. The plan is to relaunch mentoring in order to support a new colleague. 1-2 mentors will be trained in each speciality. The mentors will support the enhancement of their mentees' teaching competences as well as their adjustment to the Academy's organisational culture, but at the same time, they will develop their own competences as well. The aim of the mentorship is to learn from experience, disseminate the best knowledge and expand professional contact networks.

3.7. Study programmes

EAVA follows its teaching and study process requirements set out in higher education and vocational education legislation and in international aviation regulations. Teaching and studies at the Academy are based on flexible and modular structures.

EAVA teaches at the level of professional higher education and vocational education. Table 16 lists the study programmes and Table 17 the number of students per study programme.

Table 16. EAVA study programmes and responsible units.

Code of study programme	Title of study programme	Structural unit responsible for conducting the study programme	Programme Manager
Professional Higher Education (PHEI)			
Field of Study: **Engineering, manufacturing and construction** *Study programme group*: **Engineering, manufacturing and technology**			
194140	**Aeronautical Engineering** (2018-….)	Department of Aeronautical Engineering	Karl-Eerik Unt

118817	**Aircraft Engineering** (…-2017)		
Field of Study: **Service** *Study programme group*: **Transport services**			
2282	**Air Traffic Service**	Department of Air Traffic Services (incl. Air Traffic Service Training Organisation – ATSTO)	Anu Vare
2283	**Aircraft Piloting**	Department of Aircraft Piloting (incl. Approved Training Organisation – ATO)	Meelis Koovit
214444	**Aviation Management** (2020-…)	Department of Aviation Management	Viktor Trasberg
2284	**Aviation Management** (...-2019)		
118857	**Aviation Communication and Navigation Systems** (…-2017)	Department of Aeronautical Engineering	Nele Tootsi
Vocational education			
Field of Study: **Engineering, manufacturing and construction** *Study programme group*: **Engineering, manufacturing and technology (detailed field: Motor vehicles, ships and aircraft)**			
188817	**Aircraft Maintenance Technician** (2018-…)	Department of Aeronautical Engineering	Karl-Eerik Unt

Table 17. Number of students* per study programme (2014-2019).

Study programme	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Professional higher education						
Aviation Management	45	47	51	50	59	64
Air Traffic Services	42	31	28	26	28	28
Aviation Communication and Navigation Systems	56	55	46	31	19	17
Aeronautical Engineering					34	48
Aircraft Piloting	46	43	43	45	45	47
Aircraft Engineering	86	80	83	80	57	40
TOTAL	275	256	251	232	242	244
Vocational education						
Aircraft Maintenance Technician					16	28
TOTAL					16	28

*The number of students does not include external students and (international) visiting students. Number of students as of 10 November 2019.

3.7.1. Basic documents and structure of study programmes

Study programmes are opened, amended and closed pursuant to the Estonian Aviation Academy Statutes of the Study Programme approved by the EAVA Council.

The Statutes establish the requirements for the structure, content and quality of the curricula of the degree studies and the procedure for opening, managing and closing the curricula. The objective of the Statutes is to ensure the conformity of the curricula with the goals of the Academy's activities and the requirements established by the regulations of the Academy, the legal acts of the Republic of Estonia (Higher Education Act, Vocational Education Institutions Act (Est), Standard of Higher Education (Est), Standard for Vocational Education), the Estonian Lifelong Learning Strategy 2020, the Strategic Plan of EAVA, the European Union and the international aviation regulations and the changing needs of the main employers.

The Academy's PHE study programmes are built in a modular system comprising thematic modules of different volumes and the graduation thesis or final examination. The present PHE programmes comprise the following modules: Social Sciences, Economics and Entrepreneurship, Law and Aviation Safety, Natural and Exact Sciences, Engineering, Languages, Speciality Studies/Rating Training. The nominal study period of a PHE programme is four years and the total volume is 240 ECTS credits. In 2020, admission to a new study programme – Aviation Management (180 ECTS) – will be opened.

Practical training constitutes a minimum of 15% of the total volume of studies prescribed by the study programme. In regulated specialities, there are fixed international requirements for practice organisation and practice bases.

The vocational education study programme is not analysed in this Self-Evaluation Report, as a self-evaluation report to reassess the Motor Vehicles, Ships and Aircraft study programme group was submitted in April 2020, and in July, EAVA was given the right to provide instruction without a fixed term.

The Aircraft maintenance technician study programme in vocational education is only available as a full-time workplace-based mode of study. EAVA follows the Vocational Educational Institutions Act, Minister of Education and Research Regulation 'Procedure for implementing workplace-based study', European Commission Regulation No. 1321/2014, the EAVA Study Regulations and the Maintenance Training Organisation Exposition (MTOE). Both the study programme and the implementation plan are designed to have at least two thirds of the study programme as on-the-job training and theoretical modules are integrated between practical training sessions.

3.7.2. Study programme development

Development of the study programmes is a continuous process, whereas the amendments to the educational legal acts of the Republic of Estonia and the international aviation regulations have to be taken into account. Amendments are analysed by the programme working group and the Study Programme Councils and thereafter approved by the Academy Council. Their major task is to analyse the quality of education and training and the development of the learning outcome-based programmes. To develop study programmes, similar study programmes taught at foreign higher education institutions are compared. Study programme development visions are outlined to analyse the optimum length of studies, learning outcomes and coherence with the field. 1 ECTS corresponds to 26 hours of work by the student on average.

The Study Programme Councils involve the Academy programme managers and teaching staff members as well as the representatives of employers, alumni and current students. To harmonise learning outcomes with the expectations of the labour market, representatives of employers are also included in the Study Programme Councils. The principal activities of the Study Programme Councils are:

- monitoring the compliance of the programmes and the study process conducted based thereon with legal acts, national and international standards and aviation standards
- evaluation of the level of theoretical instruction and practical training
- evaluation of the necessary resources for conducting teaching
- mapping the needs of the labour market
- conducting evaluations and making decisions and proposals to amend them
- coordination of admission requirements

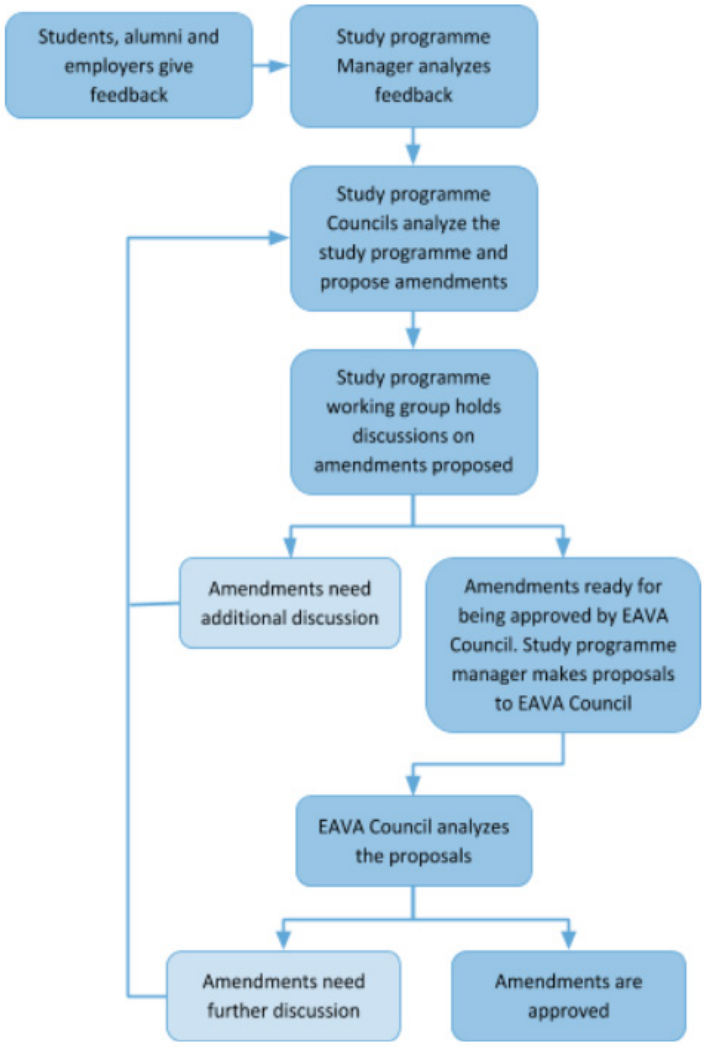

Figure 6. Study programme development.

Figure 6 depicts the process of developing and making amendments to a study programme – the analysis of amendments and their approval.

In certified specialities, international regulations are followed, first and foremost, in developing speciality modules, but also in developing the entire study programme to ensure its coherence. The requirements for the speciality modules of the study programme of **Air Traffic Services** have been established by Eurocontrol ESARR5, Regulation (EU) 2018/1139 of the European Parliament and of the Council of 4 July 2018 and, from 31 Dec 2016, EC Regulation No. 2015/340, and for **Aircraft Piloting** EC Regulations 2018/1139, 1178/2011, 965/2012 and 1321/2014. The requirements for the speciality of **Aircraft Engineering** proceed from EC Regulations 2042/2003 (until 5 January 2015), 1321/2014 Part 66 and Part 147.

The above regulations are directly applicable and determine study programme volume, subjects, outcomes, acquired level, the percentage of theoretical and practical training and the requirements

for participation. Compliance with the regulations is monitored by the ECAA. Programme development of certified specialities must be in accordance with international requirements. At the Estonian Aviation Academy, the following internationally certified training organisations are present: Air Traffic Services Training Organisation (ATSTO), Approved Training Organisation (ATO), Maintenance Training Organisation (MTO). Training is based on respective manuals and an exposition, including the training of Air Traffic Safety Electronics Personnel (ATSEP). In the development of the CNS study programme, the subject syllabi are being revised and amendments made pursuant to the ATSEP training programmes and structure (Commission Implementing Regulation (EU) 2017/373, ICAO Doc 10057). Following the abovementioned regulations serves as the most crucial factor in ensuring the quality of the study process. The results of ECAA audits, the validity of the certificates of training organisations, the satisfaction of students and employers and the employment rate of graduates are the indicators that demonstrate the compliance of the study programme with the requirements set for quality. Considering that aviation is a highly-regulated area with high requirements set for safety culture, the patterns of behaviour of the utmost importance of safety in aviation aimed at cultivating the students' sense of responsibility and awareness are developed. As the aviation industry is developing very quickly nowadays, the Academy is required to continuously develop and update the study programmes.

3.7.3. Ensuring the coherence of study programmes

The coherence of study programmes is ensured, first and foremost, by the structure of the programmes, which is based on thematic modules. To achieve coherence, the learning outcomes of study programmes are worded in a way that enables them to serve as a basis for drawing up the modules; the learning outcomes of the modules are worded in a way that serves as a basis for developing separate subject syllabi. The logical sequence of subject courses is determined by the system of prerequisite subjects. The curricula have been built so that the general subject courses are followed by courses on speciality subjects which, in turn, blend with practical trainings in enterprises. In some of the subject courses, there is a partial overlapping of content, but the lecturers have agreed on this beforehand with the aim of ensuring better coherence of the topics covered. To ensure the continuity of the coherence of topics, respective teaching staff meetings and seminars are organised.

3.7.4. Development of general competencies

Development of students' general competences (digital literacy, knowledge of foreign languages, enterprise, communication and teamwork skills, etc.) occupies a prominent place in all study programmes.

Digital literacy is supported by acquiring the learning outcome of the Module of Engineering – knowing the general principles of technical and ICT systems. The students use the Study Information System and the Moodle learning management system and take and pass e-learning courses.

Learning foreign languages takes place within the framework of the Module of Languages. As a general outcome of this Module, the students develop skills in expressing themselves in an academic context both in Estonian as well as in English and can explain verbally and in written English language speciality-related problems and participate in speciality related discussions.

The Module of Economics and Entrepreneurship is oriented towards developing the students' entrepreneurship skills. The aim of the Module is to enable the development of understanding based on the basics of education in economics. In addition, having passed the Module, students can acquire the speciality of Aviation Management as their minor field of study.

Gaining the skills supporting entrepreneurship, incl. acquiring communication and teamwork skills, is supported by applying various teaching methods such as teamwork, project-based learning and simulator exercises where the students hold different positions. Teamwork is used

where small teams of students solve project tasks. The theoretical knowledge that serves as a basis for communication is advanced by acquiring the learning outcomes of the Module of Social Sciences. In the study programme of Aircraft Piloting, communication and teamwork skills are the learning outcomes of the subject courses Aeroplane Multi-Crew Cooperation and Helicopter Multi-Crew Cooperation.

3.7.5. Feedback on study programme development

The major goal of the feedback surveys conducted by the Academy is to receive evaluations from the most important target groups on the efficiency of the Academy's activities and general functioning and to find out the areas that require improvement or further development. It helps to specify the corrective or preventive actions and address them to the units or persons responsible.

To receive feedback on the study process, the Academy has used surveys of students, employees, alumni and employers. The outcomes of surveys are used for improving the quality of studies, perfecting and developing programmes and expanding the cooperation network.

There are four systems in use at the Academy for collecting feedback from students:

- gathering of feedback and its analysis in certified specialities in compliance with the manuals of international training organisations;
- surveys involving the entire Academy student body
- monitoring of subject courses via SIS
- feedback on the lecturer's initiative (Moodle)

The students are very satisfied with the learning environment, catering opportunities, the availability of learning materials and study literature and opportunities for acquiring study experience abroad. As regards the content of studies, the students are especially satisfied with the modules of speciality studies. These are considered interesting and practical.

Giving feedback via the SIS is voluntary; therefore, the information gained is not always sufficient. To get additional information, the programme managers organise meetings with all students of the study group at the beginning of every semester, in which each and every subject course and possible problematic points are discussed separately and the students' problems are listened to. It can be said that the students have a very positive attitude towards these meetings, the information flow has improved and various problems are solved in a shorter time.

Strengths:

- Students' evaluation of the study process and their recommendations are taken into account. A representative of the student body belongs to every Study Programme Council.
- Employers' needs and recommendations are considered in developing study programmes.
- The Academy communicates with its alumni and their opinions and recommendations are requested.
- CAA-approved manuals in internationally regulated specialities.
- Fixed requirements for practice and practice bases.
- Coherence of theory and practice – scope of practical training in curricula.
- EAVA has compared its study programmes with similar ones in Europe and developed a new study programme.
- EAVA has successfully completed the assessment of study programme groups.

Areas for improvement and future development activities:

- Wider application of project-based and problem-based learning.
- Creation and development of modules in English with the aim of opening international curricula.
- Ensuring coherence of speciality subjects and subject courses taught by cooperation partners; unification of subject plan requirements.
- Integration of the Module of Entrepreneurship in all study programmes.

3.8. Learning and teaching

3.8.1. General

EAVA has defined its goals and the respective indicators related to teaching and learning in the Strategic Plan and in annual implementation plans.

The aims of teaching and learning are as follows:

- The need for formal education and the admission numbers have been analysed every year and endorsed by the Advisory Board, taking into consideration the Academy's capacity for providing education and training.
- The study process relies on the efficiency of admission and the learner-centred approach.
- The dropout rate of students is under 15%; study motivation has improved. The student counselling system has proved efficient.
- The Academy as an institution (PHEI) and its study programme groups have been internationally accredited.
- Employers are involved in study programme development and their feedback is taken into consideration.
- The study process of internationally certified specialities continuously meets international aviation requirements.
- The students are satisfied with the EAVA study process, learning environment and counselling.
- Parts of the Modules of Speciality Studies are also used in cooperation with EMA in training aviation specialists for the Defence Forces.
- The development of international cooperation takes place both in the form of a two-way academic mobility as well as with the development of English medium courses. International cooperation with top aviation HEIs functions well.
- The number of EAVA graduates and their qualifications satisfies the needs and expectations of employers and ensures the fulfilment of the goals set forth by the Ministry of Education and Research. The employment of the alumni meets the expectations of society.
- The needs for lifelong learning about the local area in the field of aviation have been mapped, and the choice and level of professional development courses conform to the expectations of the target group.

3.8.2. Planning student places and enrolment of students

The Admission Rules (Est) approved by the Academy Council serve as the foundation document of the admission process. The admission process is organised by the Board of Admissions established by the Rector's Directive. Submission of entrance applications takes place via the electronic admission system AIS (Admission Information System, *Est.* SAIS). The most suitable candidates are selected by way of competition following the ranking list drawn up according to the total points collected (the results of National Examinations included). In addition, the candidates for the specialities of Air Traffic Services and Aircraft Piloting have to pass professional suitability tests, which help determine the candidates' psychological aptitude and personality traits. A special set of tests, FEAST, is used in assessing the professional suitability of candidates for the speciality of Air Traffic Services. This set of tests is developed on a regular basis by EUROCONTROL, which also offers supportive services to test users.

The entrance examination is meant to find out candidates' prior knowledge, motivation and communication skills. The entrance exam comprises two parts: written and oral. In the oral part conducted in the form of an interview, the results of the written part are analysed and additional relevant questions asked. The interview panels include the Academy staff members as well as the employers' representatives. The interview panel of Air Traffic Services includes a psychologist.

Between 2016 and 2019, the admission system has been significantly improved:

1. Admission tests may be taken prior to submission of an application. More than half of admitted students use this opportunity.
2. In Engineering, students are jointly admitted to both specialities of the Aeronautical Engineering study programme.
3. The written part of the entrance examination takes place in Moodle.
4. More weight is attached to the competitive entrance examination.

Table 18 shows the results of entrance competitions between 2016 and 2019.

Table 18. Entrance competitions by study programme (2016-2019).

Study programme	2017	2018	2019
Aviation Management	3.8	5.7	5.5
Air Traffic Services	10.7	12.7	8.8
Aviation Communication and Navigation Systems	2.3	x	x
Aircraft Piloting	6.4	8.1	8.4
Aircraft Engineering	2.3	x	x
Aircraft Maintenance Technician*		2.6	2.2
Average	4.3	5.4	5

*Admission to Aeronautical Engineering (CNS-TECH) was started in 2018.

The competition to enrol in EAVA has been consistently high. In 2018, competition for EAVA was the highest among HEIs in Estonia. Candidates are highly motivated as can be concluded from the fact that more than half of the students admitted have passed entrance tests prior to the submission of applications. Young people who have finished upper secondary schools abroad apply as well. EAVA recognises foreign qualifications.

Table 19. Share of pre-tested students in matriculated students (2017-2019).

	2017	2018	2019
Matriculated students	57	63	61
Pre-tested (share of admitted students)	25 (44%)	35 (56%)	35 (57%)

Table 20 shows the number of applications submitted by candidates, the number of student places, admissions and entrance competition.

In 2019, EAVA was one of the most popular HEIs in Estonia: the competition was 5.0 applicants per student place. The competition in 2014/15 and 2015/16 was higher as a different methodology was used (non-qualifying applications were also included).

Table 20. Applications, student places, admissions and competition (2014-2019).

	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20
Applications	371	418	245	238	298	297
Student places	55	55	60	56	55	60
Applications per student place	6.75	7.6	4.08	4.25	5.42	4.95
Admissions	56	60	56	57	63	61

In 2018, EAVA started admitting students to the Aeronautical Engineering study programme and closed admissions to the Aviation Communication and Navigation Systems and Aircraft

Engineering study programmes. The highest number of students is matriculated in the Aeronautical Engineering study programme.

The number of admitted students by study programme is shown in Table 21.

Table 21. Admissions by study programme (2014/15-2019/20).

Study programme	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20
Aviation Management	10	14	15	15	17	16
Air Traffic Services	6	8	4	6	6	8
Aviation Communication and Navigation Systems	12	10	6	5		
Aeronautical Engineering					30	27
Aircraft Engineering	18	18	20	20		
Aircraft Piloting	10	10	11	11	10	10
TOTAL	56	60	56	57	63	61

3.8.3. Learner-centred and learning-focused approach

The students are the focal point of the entire study process; small study groups enable the Academy to apply an individual approach to teaching and learning. The students' development is supported by making use of active teaching methods, formative assessments and counselling. A description of the study process of certified training organisations is given in respective manuals and in the MTO Exposition and has been approved. During audits, the compliance of the study process with requirements is checked. The fulfilment of the goals of the study process is assessed by the satisfaction survey of the students, teaching staff and alumni. The strengths of the study process are the use of individual instruction, continuous assessment, a modern learning environment (Moodle, SIS) and teaching aids (simulators, laboratories, well-equipped auditoria). For example, the teaching method that develops students' skills in self-analysis and supports both individual and social development is simulator training (AT.A.042 Approach Control Radar). Simulators enable the inclusion of digital applications in the study process. For example, recording the student's performance enables the instructor to analyse it with the student and gives the student the opportunity to analyse it independently at a time suitable for them.

The groups of the speciality studies are small (under 15 students) and the lecturer has the opportunity to employ an individual approach. A personal approach is of utmost importance when conducting practical training in certified specialities.

Students' individual abilities and needs are also considered when teaching general courses. Thus, in higher level mathematics, an attainment test is administered in the first week of studies and academically weaker students take an additional course in mathematics. If necessary, foreign language courses for different levels are available. Additional opportunities are created by elective and optional subjects.

The ratio of independent work in different subject courses varies and may include the study of theoretical materials, solving problems of a practical nature, preparation of reports, etc. The subject syllabi provide the volume of both contact study and independent work in hours. The content and volume of independent work in general subjects is determined by the lecturer proceeding from the feedback collected from students. In general, 1 ECTS credit equals 13 hours of contact study and 13 hours of independent work. In certified specialities, the volume of contact teaching can be higher when compared with the volume of independent work. The students' independent work is supported by the Academy library, the computer classroom, e-learning environment Moodle and the laboratories.

Students participate in the work of both Study Programme Councils and the EAVA Council. Thus, they may contribute to the planning of the study process. The Student Council and the Rector meet on a monthly basis to discuss study process-related issues.

3.8.4. Modern study equipment and digital culture development

The lecture rooms of EAVA are equipped with either a TV set or a video projector depending on the size of the room. There is also a PC in every lecture room, but it is also possible to use laptops. In addition, in four of the lecture rooms, it is possible to use document cameras which can be connected to both the PC and the projector. The Academy also has a computer classroom equipped with 20 computers and 15 Mac laptops. As for more modern ICT solutions, touch sensitive classroom boards by Promethean are in use in five lecture rooms. Touch sensitive boards make it possible to upgrade drawings or PowerPoint presentations, solve problems and disseminate them to students in a digital media format.

E-learning environment Moodle is used to facilitate teaching. Its aim is to apply state-of-the-art learning methods, diversify teaching and make it more flexible as well as enhance the quality of studies. An advantage of using Moodle is the ability to provide individual feedback on students' work and academic progress. All teaching-related materials can be stored in one place. As of 2019, EAVA has 94 electronically supported courses (i.e. 53% of the total 177 courses). This figure has been increasing year on year (e.g. in 2014, there were 45 electronically supported courses).

Universal software capture solution Echo360 may be used to record lectures for a larger audience and make the lectures accessible in Moodle. This solution allows students who miss lectures to catch up as well as revisit challenging parts of the lecture. The URKUND anti-plagiarism system is integrated into Moodle and automatically checks the authenticity of work uploaded in Moodle.

Online seminars and lectures may be conducted using the Zoom platform. This solution is more frequently used for guest lecturers, but also when students are undergoing practical training. Online lectures are likewise increasingly being used when it is not convenient for the students to convene in the EAVA lecture hall for just one lecture. The Zoom platform was also a very good and useful solution during the distance learning period caused by the COVID-19 situation.

In autumn 2019, EAVA offered a free international online MOOC course 'Introduction to Aircraft' to the public: 385 persons signed up, 184 completed the course.

The Estonian Aviation Academy has participated in the e-Quality Award competition which acknowledges the high standards of e-courses and their authors for achieving excellent results in the teaching process. Twelve EAVA courses have received the HITSA e-quality award.

In 2012 and 2017, two student surveys were conducted on satisfaction with e-learning and changes in students' attitudes over five years. Students were asked whether the number of EAVA courses with e-support in Moodle was sufficient. In 2012, nearly half of the respondents wished to have more e-courses. In 2017, the percentage of those not satisfied was 38%. Consequently, during the five years, student satisfaction with courses supported with e-materials increased.

As of 16 March 2020, due to the emergency situation declared in response to the coronavirus pandemic in Estonia, theoretical knowledge instruction at the Academy was delivered via distance learning. Besides Moodle courses, Zoom was used to deliver lectures and seminars. The satisfaction survey conducted among academic staff and students revealed that both parties assessed the distance learning experience as very good. Figure 7 shows the survey results.

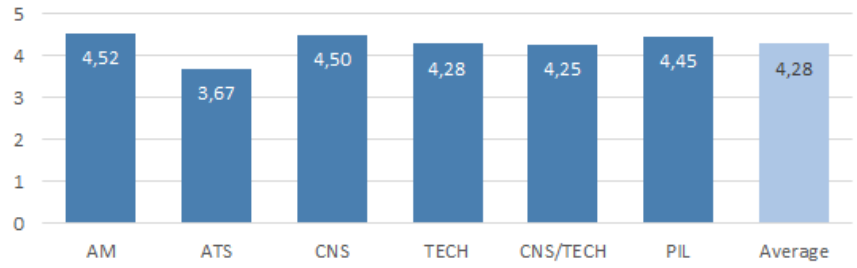

Figure 7. Students' satisfaction with distance learning: the average number of points on a 5-point scale (the survey was conducted in March 2020).

3.8.5. Organisation of practical training and its coherence with theoretical instruction

The major objective of practical training is to acquire specialist skills and develop the necessary attitudes aimed at ensuring aviation safety and the high working culture characteristic to the aviation industry. Practical training in the Academy study programmes is divided into two: familiarisation practices and practical trainings in the speciality.

Practical training comprises at least 15% of the volume of the study programme. An enterprise or organisation provided by the academic structural unit can serve as the practice base or the student themselves can find a placement. The student has two supervisors during practical training (one from EAVA and another from the practice base). The student keeps a record on practical training, which is checked by the supervisor from the practice base. The supervisor from the practice base assesses the student's performance in practical training and characterises their work throughout the period. The student analyses and gives feedback on the practical training in their report. The report is assessed by the supervisor from the Academy. The student has the opportunity to give anonymous feedback on practical training in the SIS. The documents on practical training are submitted in e-learning environment Moodle, through which the student in turn receives feedback on their reports.

Coherence of theoretical instruction and practical training is achieved by following the requirements set forth in EU regulations. The content of practical training is also fixed by EU regulations. The students highly value the practical training offered and understand the importance thereof in obtaining the learning outcomes. The general goal of speciality practice is to connect the theoretical knowledge acquired with the application thereof in practice through the work experience gained in a real working environment. Its aim is also to enforce and develop what has been taught and learned in the classroom and thereby achieve the learning outcomes. The concrete objectives of practical training are discussed and defined prior to the training in cooperation with the supervisors from the practice base and the Academy. When choosing a topic for a graduation thesis, the Academy strongly supports the realisation of a topic during the student's practical training at their practice base. The close connection between practical training and the graduation thesis helps ensure the relevance of the thesis as well as its applicability in the enterprise. This connection also fosters the student's involvement in the development activities of the enterprise during their practical training period.

Table 22. Major cooperation partners in practical training.

Study programme/speciality	Venue
Air Traffic Services	Estonian Air Navigation Services AS, Air Force Ämari Air Base
Aviation Communication and Navigation Systems	Air Force, Estonian Air Navigation Services AS, Tallinn Airport AS, OÜ Rantelon, AS Enics Estonia, Consumer Protection and Technical Regulatory Authority, University of Tartu, Tartu Observatory

Aircraft Piloting	AS Pakker Avio
Aviation Management	Tallinn Airport AS, AS Nordic Aviation Group, Estonian Air Navigation Services AS, Ministry of Economic Affairs and Communications, Magnetic MRO AS
Aircraft Engineering	AS Panaviatic Maintenance, Air Force, Aerohooldus OÜ, Magnetic MRO AS, Estonian Police and Border Guard Board Aviation Group, Nordic Aircraft Service AS

3.8.6. Satisfaction of stakeholders and competitiveness of graduates on the labour market

In developing the specialities taught at EAVA, in addition to the goals outlined in the EAVA Strategic Plan and activity support directive, the Academy also takes feedback from students, alumni and employers into consideration. Students are motivated to learn and contribute to improving the quality of their studies by providing constructive feedback both on the study process and the organisation of studies. Students' satisfaction is surveyed annually. Survey results show students' satisfaction with the quality of education, the structure of the study programme, the organisation of studies and practical training.

Figure 8 shows students' satisfaction with the quality of education.

As a rule, students are quite satisfied with the quality of education: 4.3 points on a 5-point scale. The satisfaction is the lowest in the Aviation Management study programme and, as a result, major changes have been implemented. Admission to the study programme was suspended in 2019. In 2020, students will be admitted to a new three-year Aviation Management study programme.

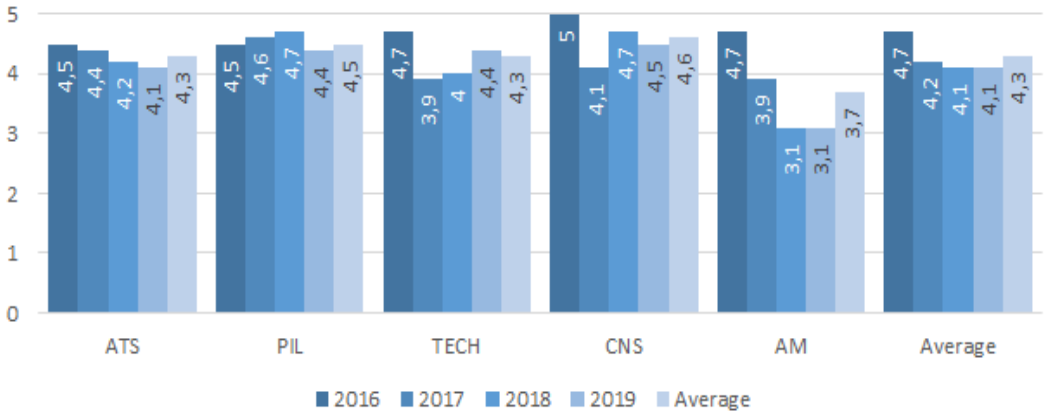

Figure 8. Students' satisfaction with the quality of education by study programme (2016-2019).

Students' satisfaction with the organisation of studies has been stable for five years: 3.8 points on average. The lowest score is in the Aircraft Piloting department: 3.3 points. Improvement activities include better individual counselling, involvement of students in the work of the EAVA Council and development of internal regulations.

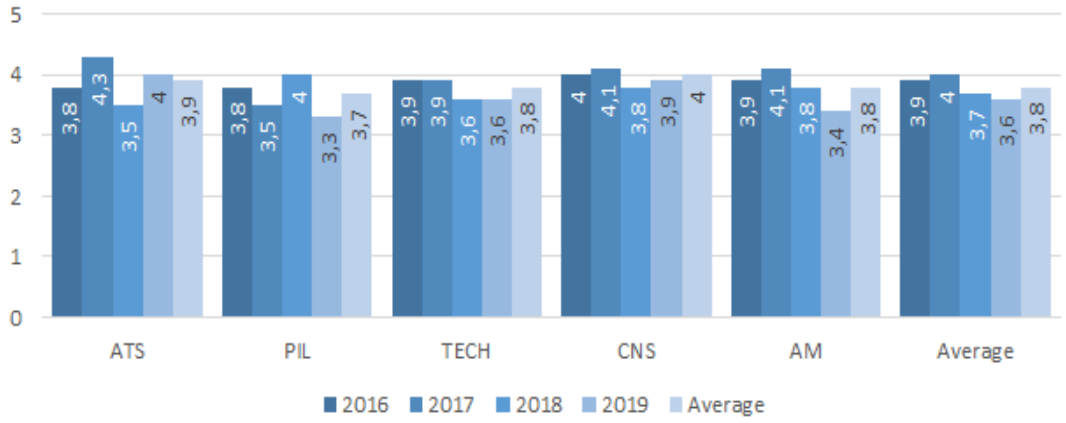

Figure 9. Students' satisfaction with the organisation of studies (2016-2019).

Satisfaction of alumni is surveyed annually. The average score is 4.2 (2015-2019). Figure 10 shows the survey results.

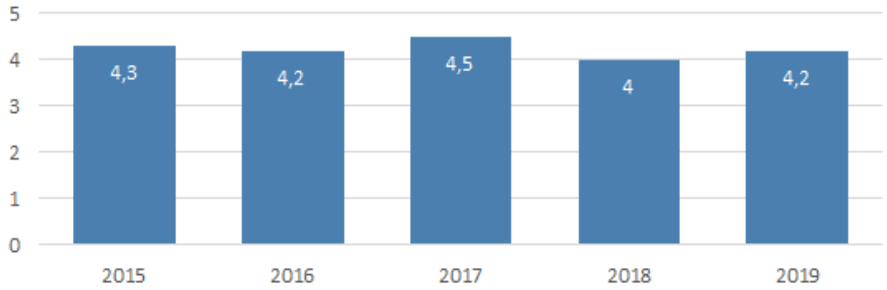

Figure 10. Alumni satisfaction with the quality of studies (2015-2019).

Employers' surveys are conducted biennially (2015; 2017; 2019). Employer satisfaction with graduates and the way in which their skills meet the needs of employers has remained stable: 3.92-3.95 (5-point scale).

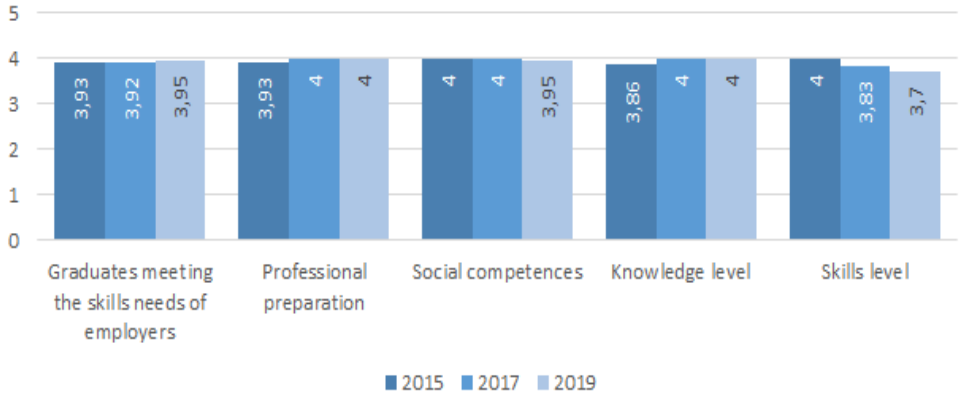

Figure 11. Employer satisfaction with EAVA graduates .

The prerequisite for employer satisfaction is the standardised education and training process conducted in compliance with the requirements of international aviation, which allows the ECAA to give EAVA PHE graduates internationally recognised aviation certificates. EAVA holds the following certificates:

1. Air Traffic Services Training Provider Certificate, which grants the right to conduct Air Traffic Control basic training and ADV/ADI, APP, APS(RAD) and ACS rating training. In addition, the maintenance agreement with the manufacturer of the ATC training simulator is renewed on a regular basis.
2. Approval Certificate of the speciality of Aircraft Piloting, which allows the Academy to provide the following licensing training courses: ATP(A), CPL(H)+ATP(H) theoretical knowledge instruction and PPL(A). In addition, the ATO must hold valid STD Qualification Certificates on FNPT II/MCC aeroplane and helicopter training simulators.
3. Approval Certificate of aircraft maintenance personnel. This certificate grants the Academy the right to provide training for Category A and B maintenance personnel.

According to gathered feedback, in addition to internationally recognised training, enterprises and organisations need specialists who have:

1) a good general knowledge of aviation and a broad outlook
2) a holistic picture of aviation and their own speciality
3) a systemic approach and an analytical thinking ability
4) in-depth knowledge of aviation safety management systems
5) an advanced sense of responsibility and readiness to work independently or take the lead
6) knowledge of economics
7) knowledge which has been reinforced through speciality practical trainings

Strengths:

- The study process is directly linked to the needs of the labour market.
- Coherence of theory and practice – scope of practical training in study programmes.
- Practical training takes place in aviation enterprises, i.e. in graduates' future places of employment.
- Employer satisfaction is studied with detailed surveys.
- Employer satisfaction with graduates' skills and knowledge.
- Education and training conducted in compliance with international aviation standards enables graduates to find work internationally.
- Close contact with employers in planning student places.
- Admission competition is among Estonia's highest.
- Small study groups allow individual support for learners.
- The Academy is equipped with modern study aids; digital culture is strongly supported.

Areas for improvement and future development activities:

- Expanding the scope of e-learning, motivating teachers to use more e-learning solutions.
- Fixing the objectives of students' independent work and giving more thorough feedback.
- Further development of practical training manuals (Aviation Management Study Programme).
- Preparation of supervisors in traineeship venues must be improved.
- Flexible accreditation of subjects passed in the course of mobility.
- Intensifying cooperation with enterprises and other higher education institutions with the aim of developing more topical trends in R&D.
- Encouraging students to give more feedback through the SIS and surveys.

3.9. Assessment of students

3.9.1. General principles of assessment in modules and subjects

The higher education assessment is based on the Minister of Education and Research Regulation 'Unified assessment system of the higher education level and the conditions and procedure for awarding a degree with distinction (cum laude)' (Est). In vocational education, assessment is

based on the Regulation 'Unified assessment system used in vocational education as the basis for assessing the achievement of learning outcomes, assessment methods and criteria and descriptions of grades' (Est).

The general assessment principles of the achievement of learning outcomes in the Academy are described in the EAVA Study Regulations.

Forms of student knowledge checks are defined in the syllabus. The assessment methods have been chosen on the principle that they measure the achievement of learning outcomes. Subject learning outcomes proceed from the module's outcomes, which in turn proceed from the study programme outcomes. Students' knowledge is checked in examinations, in pass/fail evaluations and at the defence of the graduation thesis. Assessments are entered in the assessment record.

Differentiated assessments assess students' learning outcomes on a six-point grading scale. Assessment methods and criteria are provided by the lecturers who introduce them to the students during the first lecture or class or in Moodle in the case of e-learning.

Several subject courses are taught by two or more members of academic staff. In this case, several of them are involved in establishing the assessment criteria and performing the assessment. If a project is completed as a group, the members of the academic staff who are not directly involved in teaching the subject course (e.g. Radio Measurements in Aviation, Mechatronics Systems) are also brought in to attend the defence and assess the project.

Dates of exams and pass/fail evaluations are planned in advance in exam timetables. The precise dates are agreed on with the students. Learning outcomes are checked and assessed both orally and in writing (computer-based tests, project tasks). Recently increasingly more combined forms of knowledge checks have been introduced: the final grade depends on a variety of knowledge checks based on students' active participation throughout the term (e.g. independent work, participation in seminars, test papers, group work). Thus, the academic staff help students become accustomed to working independently in a consistent manner. For the academic staff, an online course on teaching-related issues, incl. assessment, has been created.

In unlocking a learner's full potential, an individual approach plays a significant role, which is best implemented in the ATS and Aircraft Piloting study programmes (flying training and air traffic controller practical training, in which, after covering the necessary topics, performance is analysed with the student).

Assessment of subjects in the ATS module of Speciality Rating Training takes place in the ATC simulator environment as TEST and EXAM exercises. The evaluation is done by ECAA licensed Assessors. For evaluated TEST exercises, only one Assessor is acceptable. For EXAM exercises, a minimum of two licensed Assessors are required. In the case of two Assessors, both carry out their evaluation independently and the result is the combination of their reports. A leading evaluator is named and they have the final decision if any divergences appear between the Assessor's results. If available, for EXAM exercises, a licensed Assessor outside of the Academy may be used. TEST exercises will take place approximately every 2-3 weeks. For TEST exercises, it is possible for students to replay their exercises. EXAM exercises are also recorded, but only for the purpose of resolving disagreements with the evaluation. Simulator Exercises are evaluated with regard to Eight Specific Competencies and the associated Performance Objectives:

1. Situation Awareness — max 10 points
2. Traffic and Capacity Management — max 10 points
3. Communication — max 10 points
4. RTF – Radio Telephony Phraseology — max 10 points
5. Coordination — max 10 points
6. Workload Management — max 5 points
7. Self-Management — max 5 points

8. Separation and Conflict Detection max 40 points

Each Performance Objective is evaluated with one-point accuracy. The maximum result is 100 points. A list of evaluated mistakes with a short description is shown in the ATSTO Training Manual. A student must achieve a total score of 75% (75 points) to pass the test/exam and no loss of separation or severe airspace infringement must occur. At least 30% of each individual competency must be achieved, at least 40% must be achieved from Competency No. 6 Workload management and No. 7 Self-management and at least 50% must be achieved from No. 4 RTF – Radio Telephony Phraseology.

3.9.2. Assessment of practical training

Practical training is assessed on the basis of the reports of the supervisor and the student. A learner is given comprehensive support during practical training and their development and the achievement of learning outcomes is regularly documented.

Objective assessment is ensured by setting explicit teaching goals for subject courses and drawing conclusions on the basis of exams and pass/fail evaluations. The teaching goals of subject courses and the requirements for completing subject courses are accessible in the SIS by the start of the subject course at the latest.

30 practical training supervisors were trained under the programme PRÕM ('Corresponding learning with labour market needs' and the activity 'Improving the reputation of vocational education; expansion of apprenticeship training') from 10 March 2017 to 30 November 2018.

3.9.3. Assessment of final exams and graduation theses

When the subject ends, students provide feedback on the subject, which involves questions about the feedback the students received on their progress during the semester. Student feedback allows lecturers to improve their teaching methods, feedbacking included.

The defence of graduation theses is regulated by the Study Regulations, the guidelines for written papers and the guidelines for writing and assessing the graduation thesis. The defence committee members fill in assessment sheets based on the assessment criteria during the defence.

To promote the competence of supervisors, trainings have been organised for all supervisors on the following topics: research methods, academic writing and the supervision process, research ethics and copyright (See Section 3.6.2). A dedicated course for members of the academic staff and supervisors 'Teaching at the Estonian Aviation Academy' has been set up in Moodle.

Students' rights and obligations, including assessment and grading, are defined in the Study Regulations. More relevant rights and obligations are outlined in the Information Folder for first-year students.

3.9.4. Principles of APEL

The Estonian Aviation Academy has adopted the EAVA Procedure for Accreditation of Prior and Experiential Learning which regulates the assessment of applicants' competence, i.e. correspondence of the applicant's knowledge, skills and attitudes to the learning outcomes of the study programme or parts thereof. If the applicant's competence meets the requirements, it will be recognised in the completion of the study programme. Seminars are arranged to introduce the principles and process of APEL to students and staff. Respective information materials and instructions are available on the EAVA homepage. Information on applying for APEL is also spread via student mailing lists. The Academy ensures counselling of APEL applicants . The counsellors and the respective board (assessors) have been approved by the Rector's directive. Prior learning and work experience is accredited on the basis of the student's electronic application evaluated by the APEL Board. Depending on the study programme, prior learning and work experience can constitute up to 75% of the total volume of the study programme. Applications can currently be submitted during the academic year for recognition of a separate subject course, group of subjects or module. The specialist of the Studies Department reviews the

applications and sends them to the APEL Board. One of the major problems in applying the principles of APEL is that it is quite difficult to equate the ECTS credits earned at a foreign HEI with the compulsory subjects of EAVA. To solve this problem, the Academy is planning to increase the volume of optional subjects which could be covered by the ECTS credits earned at a foreign HEI.

The number of APEL applications has increased year on year. As a rule, applicants have access to advisory services prior to submitting an application; thus, most of the applications are approved (Table 23).

Table 23. APEL applications, 2014-2019.

	2014/15	2015/16	2016/17	2017/18	2018/19
Applications	37	43	61	62	72
Fully approved	26	41	54	62	70
Partially approved	6	2	3	0	1
Not approved	5	0	4	0	1

APEL applications do not include learning experience in mobility programmes (e.g. Erasmus, DoRa, NordPlus). An exceptional case is learning completed outside agreements: a dedicated application is to be submitted.

Strengths:

- An online course for academic staff on teaching-related information (assessment, teaching skills, requirements arising from international regulations).
- Training events for practical training supervisors.
- A simple and student-friendly online APEL application process.

Areas for improvement and future development activities:

- In order to ensure teaching quality, it is necessary to continue making assessment criteria and practical training requirements more concrete by involving aviation experts from enterprises.

3.10. Study support systems

3.10.1. Student counselling

Learners are provided with academic, career and psychological counselling; each learner's individual development and academic progress is monitored. The support systems aim to assist the learner from admission to graduation.

Academic counselling is provided to students by studies specialists as well as the heads of departments. The main duty of studies specialists is to ensure that the learner is fully informed about the study programme.

Academic counselling is intended to support students in study organisational issues related to planning studies. Together with the academic counsellor, solutions are found to the following problems:

1) planning of studies
2) calculation of study load and choice of subjects
3) taking of examinations and pass/fail evaluations
4) transfer of subjects and taking account of prior learning and work experience (APEL)
5) planning of academic leave, extension and interruption
6) changing of the study programme and taking up studies in a new speciality
7) studying as a visiting student

8) removal from the student register (ex-matriculation)
9) continuation of interrupted studies
10) development of learning skills, choosing a learning style appropriate for higher education studies

If a student is not able to participate in studies at the usual rate, they are offered alternative solutions to continue their studies. Alternatives include opportunities for academic leave or drawing up an individual study plan.

Counsellors can help with the development of study skills, the selection of appropriate learning styles and balancing studies and private life.

Students' academic progress is continuously monitored. If a learner fails an exam and/or assessments or does not participate in studies, they are invited for counselling by the studies specialist in order to prevent further problems.

The study programme of all students of the same speciality has been drawn up in such a way that the subject courses have to be covered in the prescribed sequence. An attendance check is conducted in the subject courses of speciality studies. These are the basic measures that help ensure completion of the studies within the standard period. Students are supported by current counselling.

To facilitate the introduction of new students to life at the Academy and get them involved, speciality departments and the Student Council meet with first-year students. There is a subject course for the students – Introduction to Aviation – which introduces all specialities taught at the Academy, the international aviation requirements thereof and prospects in the labour market. To train student tutors, a Student Counselling e-course is offered. Tutors who have completed the course counsel first-year students.

To realise a student's full potential, an individual approach plays a significant role, which is best implemented in the ATS and Aircraft Piloting study programmes (flying training and air traffic controller's practical training, in which, after covering the necessary topics, performance is analysed with the student). Since 2016/2017, individual performance reviews with students in engineering specialities have been conducted. The feedback has been positive.

Career counselling is closely related to practical training. As regards in-company practical training, the Academy supports the student's wish to undergo training in a company which will take the student's career plan into consideration. Career counselling is provided by heads of speciality departments. The head of the speciality department helps to deal with the following issues: changing the speciality, finding a job, writing a CV and letter of motivation, preparing for a job interview, balancing studies and private life, designing studies in compliance with career plans (e.g. additional specialities, optional courses), practical training.

Psychological support is provided by the psychologist whom students can visit on their own initiative or by recommendation of the studies specialist. Information on the opportunities and the organisation of psychological counselling is available on the Intranet. Anonymous free online psychological counselling is available at lahendus.net**.**

The abovementioned counselling methods are efficient as can be seen from the student satisfaction survey.

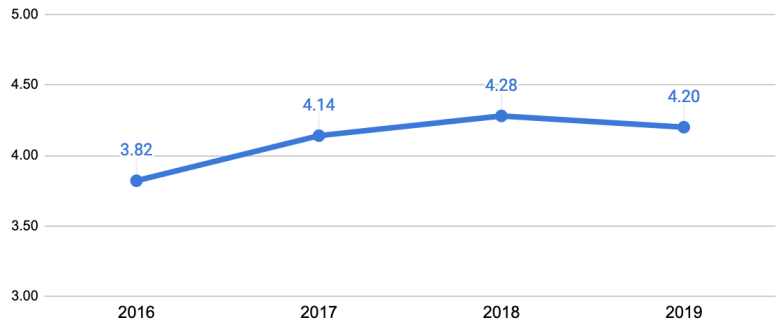

Figure 12. Student satisfaction with counselling (2016-2019).

3.10.2. Supporting and counselling international students

The foreign relations specialist takes care of foreign students, being responsible for the preparation, arrangement and completion of their learning mobility. The specialist is the first point of contact for foreign students if they have any concerns or problems (incl. health problems, counselling, administrative issues). If possible, the specialist will help the students themselves or help find a way to solve the problem. Foreign students also have tutors (students from the Academy who have participated in learning mobility). They have a social media group which comprises the specialist members of the Student Council and tutors. The aim of the group is to speed up communication. The semester is launched with the so-called Introductory Day to familiarise students with the study centre and the general organisation of studies. During the first weeks of the semester, an informal dinner is organised for foreign visiting students and tutors. Thereafter, they are invited to all student events (movie nights, parties, sports events) and joint exercises. A gym and sauna are also available. Each semester, a subject introducing the Estonian language and culture is taught (3 ECTS). Teaching and administrative work are both conducted in English and *ca* 90% of the books in the library are in English. Mid-semester, the student meets with the specialist to analyse their studies and identify problematic issues. Towards the end of their studies, the foreign visiting students may provide feedback to select the Best Erasmus Lecturer. Learning mobility feedback is given on the Erasmus+ platform Mobility Tool. At the end of the semester, the specialist organises an informal lunch, collects improvised feedback and summarises the mobility. The foreign visiting students' feedback on support activities has been very good.

3.10.3. Student participation in extra-curricular activities and civil society initiatives

The Academy tries to involve students in the promotion and popularisation of aviation in the public (see Section 3.12). Student volunteers host student shadows, participate in Open Days and represent EAVA in various educational events all over Estonia. Students from the Aircraft Piloting speciality are involved as instructors in simulator flights for fun. Most of the organising team members of the Estonian Aviation Days are EAVA students. The students present various exhibits, ensure the safety and security of aircraft landings at the Aviation Days, etc. It is possible to take the subject course 'Organising and Conducting a Public Aviation Event' (2 ECTS). The Academy allows the use of its premises during donor days, movie nights and other events organised on the initiative of the students.

The Department of External Relations and Marketing allocates funds from its budget for the Student Council to organise leisure time and sports activities (incl. support for Student Days of Winter Sports in Latvia, participation in Estonian Academic Sport Federation events, rental of gyms and sports grounds, etc.). Additional support is available to top athletes. Students who compete at the professional level receive a grant.

3.10.4. Interruption of studies and dropping out and actions taken to reduce the number of cases

The nominal length of studies in EAVA professional higher education is four years. Male students' mandatory service in the Defence Forces (8-11 months) extends the average length of studies (Table 24). The vast majority of EAVA students are liable to the national defence obligation. The average length of studies is also subject to academic progress: as a rule, according to the Study Regulations, students who experience academic insufficiency are not transferred to the speciality studies, i.e. the student must take academic leave to settle their academic insufficiency.

Table 24. Average length of studies*.

Study programme	Nominal length of studies	2014/2015	2015/2016	2016/2017	2017/2018	2018/2019	Average length of studies
Aircraft Engineering	4	4.93	4.88	4.56	4.67	4.73	4.75
Air Traffic Service	4	4.07	4.28	3.79	4.12	4.24	4.1
Aircraft Piloting	4	4.75	4.45	4.26	3.61	4.66	4.35
Aviation Management	4	4.23	6.2	4.25	4.26	4.01	4.59
Aviation Communication and Navigation Systems	4	4.4	6.73	5.2	5.12	5.3	5.35
Average length of studies	4	4.47	5.31	4.41	4.36	4.59	4.63

*The average length of studies in order to graduate shows the average number of years it takes from the start to the completion of studies. External students who complete the studies are excluded from this calculation.

The percentage of dropouts by study programme from 2015-2019 is given in Table 25. The data is compared with Estonia's average and that of other PHEIs in the same field. First-year dropouts are shown in Table 25.

In the EAVA service field study programmes, the rate of dropouts as an average of all years of study (Table 25) is significantly lower than the average in Estonia and in other comparable PHEIs. The rate of interrupters has been higher than average in the engineering field (Aeronautical Engineering). In 2018, the measures applied contributed significantly to the decrease in the number of interrupters. However, in 2019, the rate of first-year students who interrupted their studies increased in the Aeronautical Engineering study programme.

Table 25. Rate of dropouts in their first year of studies (2015-2019) (Source: Haridussilm).

Field of study	Educational institution	2015	2016	2017	2018	2019
Engineering, manufacturing and construction	Estonian Aviation Academy	16.70%	33.30%	30%	9.50%	35.70%
	Tallinn University of Applied Sciences	32.70%	36.10%	26.10%	31.40%	27.50%
	ESTONIA	30%	32.70%	29.70%	29.40%	28.60%
Services	Estonian Aviation Academy	12.80%	7.10%	10.80%	5.40%	8.30%
	Estonian National Defence College	33.30%	30.50%	26.80%	8.50%	14.50%
	Estonian Academy of Security Sciences	11.60%	8.40%	13.20%	9.20%	8.60%
	Tallinn University of Applied Sciences	35.60%	30.30%	24.40%	20.40%	24.60%

	ESTONIA	29.70%	23.40%	21.40%	19.90%	23.80%
TOTAL	Estonian Aviation Academy	14%	15%	17.50%	6.90%	20.30%
	Estonian National Defence College	33.30%	30.50%	26.80%	8.50%	14.50%
	Estonian Academy of Security Sciences	9.90%	8.20%	11.60%	8.40%	11.20%
	Tallinn University of Applied Sciences	33.10%	35.20%	25.90%	29.80%	27%
	ESTONIA	21.30%	22.30%	21.20%	21.60%	21%

Table 26. Rate of dropouts (Source: Haridussilm).

Field of study	Educational institution	2015	2016	2017	2018	2019
Engineering, manufacturing and construction	Estonian Aviation Academy	12.80%	11.40%	18.10%	7.50%	24.20%
	Tallinn University of Applied Sciences	22.50%	22.90%	15.70%	16.30%	14.90%
	ESTONIA	18.90%	18.90%	16.40%	16.30%	14.80%
Services	Estonian Aviation Academy	13.20%	8.50%	11.30%	2.60%	5.30%
	Estonian National Defence College	9.50%	13%	7.80%	8.10%	8.30%
	Estonian Academy of Security Sciences	9.60%	7.40%	10.50%	10.10%	13.30%
	Tallinn University of Applied Sciences	17.20%	23.30%	13.40%	13.70%	13%
	ESTONIA	17.50%	16.50%	12.50%	11.60%	13.80%
TOTAL	Estonian Aviation Academy	13.00%	9.40%	13.50%	4.30%	12.40%
	Estonian National Defence College	9.50%	13%	7.80%	8.10%	8.30%
	Estonian Academy of Security Sciences	8.90%	7.40%	9.10%	9.20%	12.50%
	Tallinn University of Applied Sciences	21.80%	23%	15.40%	15.90%	14.60%
	ESTONIA	16.20%	16.10%	14.50%	13.60%	13.50%

Reducing the rate of dropouts. Several measures have been introduced to reduce the rate of dropouts and prevent the interruption of studies. Academic progress is continuously observed and students receive individual counselling. The admission system has been improved in order to discover the motivation and attitudes vis-à-vis studies prior to the commencement of studies. The most common reason for interrupting studies is, firstly, that the student has reached an understanding that the speciality undertaken is wrong and, secondly, that the student takes up a full-time job.

Activities to reduce the dropout rate may be divided into preventive measures and measures that facilitate solving problems which arise during studies. An informed choice of speciality is a preventive measure, which helps reduce the interruption of studies. The following is a list of support activities EAVA offers to reduce the number of dropouts.

Preventive activities – to get more informed and motivated entrants:

1. Cooperation with upper secondary schools and the public of our region, public lectures, Aviation Days.
2. Preparatory courses to familiarise potential students with specialities and provide general knowledge related to aviation. EAVA runs a partially online course for upper secondary school pupils (Introduction to Aviation Specialities, 2 ECTS) in the spring term.
3. Increasing candidates' awareness of specialities (presence at education fairs, school visits, study tours to visit EAVA, student shadows, information days).

4. Admission tests prior to submission of applications.

Measures to solve problems which arise during studies:

1. All students may receive counselling either at the Study Department or in the speciality department both orally and in writing.
2. Tutoring has been introduced. The subject course Student Counselling is offered to future tutors.
3. Individual interviews with students on the grounds of academic insufficiency.
4. Bridge courses to reduce disparities between students' levels in Science (Basic Math), additional consultations.
5. Implementation of APEL.
6. Performance reviews with students.

The Department of Aeronautical Engineering has the highest number of students with poor academic performance and the highest rate of dropouts in the Academy. This is why, recently, during two academic years (2017/2018; 2018/2019), performance reviews have been conducted. Performance reviews are a chance for students to discuss issues hindering studies, look for ways to overcome academic failure and continue studies. The department coordinator monitors students' academic performance and, in the Aircraft Engineering speciality, also the attendance of students in compliance with the requirements of the Training Manual.

Motivation system:

1. To enhance the motivation of first-year students, the share of aviation subject courses has been increased.
2. Awarding grants (e.g. grants from various aviation companies) to motivate successful students.
3. Creating and supporting sports facilities. EAVA has a state-of-the-art gym for students.
4. Offering optional courses in aviation to first-year students.
5. Involving employers/practitioners in teaching.
6. Organising meetings with employers.
7. Offer practical training places and arrange practical training in summer with enterprises.

3.10.5. Taking special needs into consideration

The opportunities of students with special needs are regulated in the Study Regulations. The Estonian Aviation Academy supports students with special needs by offering several support services. The Academy has ensured that students with special needs have easy access to the Academy building (special ramp) and can easily move around inside the building. There is a lift in the building connecting all three floors. There is also a break room for the disabled. It is possible to customise the learning environment (e.g. adding an extra table in the lecture room) proceeding from the needs of the student. Students with special needs have been ensured access to information systems; in the majority of subjects, the learning materials are accessible in the Moodle environment. As regards the learning environment, a student with special needs is supported by the information secretary, multimedia specialist and academic counsellor. The candidates for the curricula of Air Traffic Services and Aircraft Piloting have to pass health checks because there are medical standards established by a Government of the Republic regulation which apply to these specialities. Therefore, there are not many students with special needs at EAVA.

3.10.6. Library

EAVA has the only public aviation library in Estonia. Apart from students and staff, EAVA alumni, participants in in-service training, employees of aviation companies, academic staff, employees and students of other HEIs, pupils of general education schools, etc. may also register as users at the library.

The library has 8682 items, including 5849 items in foreign languages, and 408 registered active library users as of 31 December 2019. Since April 2016, the library has started to use more

electronic study aids (tablets), and the total number of borrowed items has slightly decreased (Table 27). As of 2020, the library has 120 tablets with study materials. The task of the library is to contribute to the promotion of aviation education and culture, offering and disseminating high-quality information necessary for teaching, studies and R&D.

Table 27. Library statistics (2015-2019).

Year	2015	2016	2017	2018	2019
Readers, total (incl. reregistered and first-time registered readers)	362	363	389	391	408
Students	250	241	264	250	274
Exchange students	18	18	13	26	21
Other readers (employees, academic staff, readers not from EAVA)	94	104	112	115	113
Borrowing, total	10,677	11,913	11,725	10,777	9895
Items, total	7475	7813	8002	8305	8682
Items in English	2590	2645	2661	2670	2709
Items in Estonian	2706	2743	2784	2811	2842
Other (German, French, Russian, etc.)	2179	2425	2557	2824	3131

Strengths:
- The system of students' personal counselling is well functioning.
- A tutor training course has been created.
- Foreign visiting students are supported by dedicated tutors.
- The speciality departments support students in finding practical training locations.
- Special measures have been introduced to reduce the rate of dropouts and prevent the interruption of studies.
- Only aviation library in the region.

Areas for improvement and future development activities:
- To elaborate the system of psychological counselling needs.
- To introduce a system of student performance review interviews in all specialities.
- To enhance cooperation with gymnasiums to get more motivated student candidates.

3.11. Research and development

The R&D activities of the Estonian Aviation Academy are based on the Higher Education Act to advance lifelong learning that meets the needs of the labour market, provide services involving studies and development, carry out applied research and support the development of students into responsible and enterprising citizens.

According to the EAVA Strategic Plan 2016-2020, one of the goals set was to focus on R&D activities – application of EAVA's development capability to become an aviation development gateway in Estonia. Strategic activities were defined to achieve the goal. A number of these activities will have been carried out by the end of 2020.

The Strategic Plan states that the role of EAVA as a partner and coordinator of development activities is to cover the needs of the Estonian state for development in the field of aviation and to bring aviation-related development projects to Estonia, coordinating their realisation in the region.

The necessary framework documentation has been arranged and created for the coordination of development activities. The Academy's R&D activities are guided by the following internal regulations:

- EAVA Procedure for Research and Development (Est)
- EAVA R&D Development Plan (Est);
- EAVA Procedure for Registering Spin-off Companies (Est)
- Procedure for disposing and using EAVA intellectual property (Est)
- EAVA Laboratories Development Plan (Est)
- EAVA Strategic Plan 2016-2020

In 2016, the structure of the Academy was reorganised and the position of Vice Rector for Development was created to manage the work of the Development Department and the R&D activities of the Academy.

According to the recommendations made in the previous institutional accreditation, the EAVA Procedure for Research and Development was updated and improved in 2018. New principles of internal funding and evaluation of R&D activities were included to increase the quality and quantity of R&D activities in EAVA. The EAVA Procedure to Register Spin-off Companies was created to regulate spin-off activities and include more students in research activity. From autumn 2020, regular meetings will be held with students on spin-off programmes, introducing spin-off framework in the Academy, related documentation and possible cooperation areas.

From spring 2020, the structure of the Academy has been reorganised and the activities of the Development Department as a separate unit have been terminated, as development activities are more tied to the activities of speciality departments. R&D activities are coordinated at the strategic level by the Research, Development and Creativity Council (*hereinafter referred to as* the RDC Council), which has members covering all specialities.

The RDC Council sets focal areas for research and compiles ideas and activities for a long-term plan for R&D activities by academic year, considering EAVA's investment potential, faculty resources, EU funding possibilities and input and demand from enterprises and the Aviation Cluster.

According to the EAVA Procedure for Research and Development, the RDC Council evaluates the development projects and research of the previous period and decides which projects are sustainable. For the 2020 period, 40,000 euros has been allocated for EAVA's R&D projects.

The results and impact of R&D activities are analysed and summarised in the annual activity report on the basis of annual reports from the RDC Council and speciality departments. The academic staff reports on their R&D activities in performance reviews based on the plans set out in the workload sheets for the academic year.

Table 28. Performance indicators for the R&D activities of EAVA in relation to the goals of the Strategic Plan for 2020.

Goal: To become an aviation development gateway in Estonia			
Performance indicator	**Level 2015**	**Level 2019**	**Target level 2020**
Number of international partners in development projects	0	3	3
Number of partners in development projects in Estonia	5	12	15
Number of registered spin-off enterprises at the Academy	0	0	2

Table 29. Revenue from R&D-related contracts and projects, 2014-19 (in thousands of euros).

Indicator	2014	2015	2016	2017	2018	2019
Number of R&D contracts	2	-	2	2	2	1
R&D contracts and projects revenue	6.8	-	810	133	50	11

Note for Table 29, the large-scale contracts of Instigo Eesti OÜ and Lennuliiklusteeninduse AS (EANS) in 2016-2017 and the related activities are spread over a long period of time. The deadline for the last project is 2021.

The R&D focal areas for the reporting period are:

- Innovative aerodynamic elements – product development, innovative materials and technologies, green aviation.
- Remote tower prototype development – automation, robotics, human resource optimisation.
- Unmanned aviation applications – digitalisation, new services, smart specialisation, sensory.
- Validation of procedures – validating modern aviation instrument approach procedures that use the wide area augmentation system and precise GPS capabilities.
- Passenger flow modelling – route modelling for Estonian airports, optimising human resources.

R&D activities are carried out according to the EAVA Procedure for Research and Development (Est).

Research. Research or study ordered by an external partner or carried out for the development of EAVA which results in publications or research reports that meet the Estonian Research Information System (ETIS) classification and have the accepted characteristics of research (originality, novelty, objectivity, etc.).

The Academy regularly cooperates with various stakeholders and companies to carry out studies, research, testing and procedures (and other contractual work). More than ten cooperation agreements have been signed during the period to support cooperation. Cooperation agreements can be classified as agreements with non-profit associations and state-owned companies (Estonian Aviation Cluster, Nordic Aviation Group AS, Estonian Civil Aviation Administration) and private companies (Threod Systems, Lufthansa Consulting GmbH, NA Advisory, etc.). Cooperation with companies provides the Academy with valuable feedback on what is happening in society and enables better planning of both research and development activities in accordance with the expectations of future employers. A good example is the cooperation agreement signed in 2017 with international airline Wizz Air for testing and recruiting students of the Academy (Wizz Air signs partnership agreement with five universities).

The Academy actively cooperates with private companies. Large-scale applied research is related to remote sensor activities for unmanned aerial vehicles (total contract volume: 800,000 euros).

The most extensive applied research project in manned aviation is the design of operational procedures for a remote tower using the Tartu remote tower prototype (provisional aggregate value of the agreement: 124,835 euros, excluding VAT).

Examples of development projects started during the reporting period and continuing:

- New technological solutions to improve the aerodynamic characteristics of an aircraft wing.
- Using additive manufacturing processes for metal-based parts in aviation.
- LPV approach procedure validation for Kuressaare, Kärdla, Tartu and Tallinn airports, including safety assessment, simulator validation and test flights in corresponding airports.
- Development of the Remote Tower Procedures' Draft, Validation of the Procedures and Preparation of their Certification Based on Human Factor Analyses.
- Applied Research in Unmanned Aircraft Systems for geo mapping.
- Passenger flow models on the example of Estonian air transport.
- Air traffic and logistics development between EU rural areas and China.

The cooperation partners for large-scale research projects have included Instigo Eesti OÜ, the Estonian Defence Forces, Tallinn Airport, Estflow Consulting OÜ, UFA Inc. and EANS. The research work has resulted in a low number of publications because of the partners' confidential and private information.

Table 30. Number of publications in 2014-2019 by classification in ETIS as of 16 May 2019.

Classification	1	2	3	5	6	**Total**
Publications	12	2	14	5	3	**36**

The publications reflect some of the research work done by EAVA employees. The highest-level publications are mostly related to the doctoral studies of the employees. As of 16 May 2019, a total of 36 publications by EAVA employees have been registered in the research information portal ETIS during the reporting period.

Among the publications, the textbook 'Fundamentals of Radio Engineering' by Jaak Umborg, lecturer at the Academy, published in September 2017 (in 2019 as the first e-book of EAVA), should be highlighted. According to experts, this is an important contribution to educational literature on Estonian aviation.

Students are mostly involved in project-based R&D activities as part of their practical studies and mostly through their thesis topics.

Development. Activities arising from EAVA's internal needs intended for the development of teaching and learning, including development of research for academic staff, methods, material and technical bases.

The key points in the rapidly evolving field of aviation are digitalisation and automation, which are also the main growth areas for smart specialisation. Considering the technological developments in aviation, one of the most extensive directions of EAVA's development activities is the operation, testing and certification of unmanned aircraft systems (UAS).

UAS includes rapidly evolving modern technologies that are also supported by the technical infrastructure of the Academy and its location next to Tartu Airport.

In order to integrate UAS into research and study programmes, the RPAS laboratory development was initiated in 2016 as part of the EU Structural Funds project 'Improving the learning and research capacity of the Estonian Aviation Academy in the field of remotely piloted aircraft and promoting internationalisation (ELASTRA, project budget 440,274.98 euros). The RPAS laboratory, which brings together unmanned aerial vehicle training and development activities, was opened in 2017.

In the project ELASTRA, an unmanned aircraft training module (20 ECTS) has been developed and the academic staff have participated in international unmanned aviation trainings in the Netherlands, Finland and Ireland. With the funding of the same project, it is planned to supplement the EAVA training complex in terms of unmanned aircraft technology. In addition, communication, navigation and monitoring systems for remotely piloted aircraft will be purchased.

In May 2020, a UAS working group was convened, which includes representatives from all disciplines, with the aim of organising and carrying out development activities and projects related to unmanned aircraft. This is an important initiative in which the specific knowledge of all related disciplines is concentrated and a specific niche of the Academy is developed compared with other Estonian UAS centres in order to increase the competitiveness of the Academy and its ability to serve society.

Another important development was the establishment of an aeronautical physics laboratory, as this allows EAVA to provide the general subjects of the study programme based on the specifics

of aviation. In 2017, laboratory equipment was ordered in the total amount of 24,216 euros, and in 2018, the laboratory was set up for everyday teaching.

In July 2020, within the framework of the EEA/Norway Cooperation Programme in Higher Education the joint EAVA and University of Tromsø project 'Simulation-based Learning in Aviation' was approved. The total funding for the project is 82,580 euros. As a result, a simulation-based learning module will be developed for Bachelor's and Master's studies at both universities.

Creative activity. Intellectual work that may result in an application for patents or utility model certificates and creative work that may have public use: exhibitions, original creations, participation in competitions, festivals and fairs, works in public space, etc.

EAVA employees have participated in the following professional international conferences with publications and presentations:

- 13th International Technology, Education and Development Conference, Valencia, Spain. March 2019. 'Supporting the Learner in the Estonian Aviation Academy.'
- AEGATS 2018, Toulouse, France. 23-25 Oct 2018. 'Advanced trailing edge flap design for commercial aircraft.'
- 13th Research and Education in Aircraft Design Conference 2018, Brno, Czech Republic. November 2018. 'Trends in the development of aircraft for regional routes: impact on the European air transportation system.'
- 10th annual International Conference of Education, Research and Innovation, Seville, Spain. November 2017. 'Student Counselling for Lowering the Number of Interrupters in the Estonian Aviation Academy.'

One patent application has been registered with the Estonian Patent Office:

- Invention: Cruise miniflaps for aircraft; Owners: Estonian Aviation Academy; Authors: Peep Lauk; Priority number: EP17207454.4; Priority date: 14 December 2017.

In addition, the trademark of the Estonian Aviation Academy is registered with the Patent Office (trademark certificate no. 55424).

Participation of EAVA in R&D networks and projects

The Academy is a member of the Estonian Rectors' Conference of Universities of Applied Sciences (RCUA). Rectors, Vice Rectors and quality managers of PHEIs are involved in RCUA activities, the primary objectives of which are to enhance the quality of teaching and learning and better harmonise the activities of PHEIs and the needs of society. Through the RCUA, the Academy participates in the work of the EURASHE (European Association of Institutions in Higher Education) and the UASnet (Universities of Applied Sciences European Network).

EAVA has established productive working relationships with several government authorities (Civil Aviation Administration, Ministry of Economic Affairs and Communications, Estonian Defence League, Estonian Defence Forces, City of Tartu, etc.) as well as with other enterprises, conducting consultations, applied research and contract work based on their needs. Through participation in professional associations, the Estonian Qualifications Authority and field-related clusters (e.g. Estonian Aviation Cluster), EAVA obtains feedback on the needs and expectations of society and, at the same time, promotes its R&D services.

Table 31. In the period from 2015-2020, EAVA participated in the following networks and joint projects.

No.	Organisation	Objective
1	Estonian Rectors' Conference of Universities of Applied Sciences (RCUA)	Enhancing the quality of teaching and learning. Joint indicators for RDC at institutions of professional higher education

2	The University of Tallinn and Tallinn University of Technology, committee of Master's programme to educate teachers of technology education	Development of the joint study programme of the University of Tallinn and Tallinn University of Technology
3	Occupational Qualification Standard Working Group: Aviation Engineer	Development of an occupational qualification standard for the aviation engineer, setting up a relevant professional qualifications committee
4	EUROCONTROL – European Organisation for the Safety of Air Navigation	Development of ATM staff certification (incl. training) guidelines
5	Estonian Research Council	Participation in the work of the programme committee of the Estonian Research Council as an expert
6	SAIS consortium, steering committee	Development of the Study Admission Information System (SAIS)
7	Estonian Aviation Terminology Board	Development of aviation terminology

In 2019, in cooperation with Tallinn University of Technology, the subject course Cyber Security was created. For spring and winter 2020, TalTech Centre for Digital Forensics and Cyber Security and EAVA, in collaboration with the NATO Cooperative Cyber Defence Centre of Excellence (NATO CCDCOE), have planned a unique training opportunity for students and aviation sector professionals.

Strengths:

- A support system for R&D activities has been established.
- A good set of resources and facilities as well as competences to carry out aviation specific R&D projects and applied research.
- Due to cooperation in the organisation of practical training and as an associate member of the Estonian Aviation Cluster, EAVA receives regular feedback from companies and cooperation partners on their expectations and needs vis-à-vis R&D services.
- Being the only aviation HEI in Estonia, EAVA has established productive working ties with industry-related enterprises, associations and consortiums.

Areas for improvement and future development activities:

- Participation of the academic staff in R&D projects and activities is uneven; low participation of academic staff in R&D activities hinders the transfer of new knowledge obtained in R&D activities to teaching. Planned activities: the expected R&D workload of the teaching staff formulated in the EAVA Statutes of the Academic Employee will be discussed with staff members annually when compiling their workload sheets for the next academic year. Staff members' participation in R&D projects will be monitored and evaluated regularly by the RDC Council.
- Low inclusion rate of students in research activity. Planned activities: active R&D projects must be made more visible, especially to staff and students. Academic staff should be reminded on a regular basis that thesis topics should be related to ongoing R&D projects. From autumn 2020, regular briefings will be held with students on spin-off programmes, introducing spin-off framework in the Academy.
- EAVA R&D services are not clearly visible to partners and potential partners. Planned activities: R&D services will be presented on EAVA's webpage and other relevant environments (e.g. Estonian Aviation Cluster webpage, Estonian R&D services database ADAPTER). EAVA joined the ADAPTER network in May 2020. With the ELASTRA II project (EU structural funds allocation 150,588.53 euros), packages of educational and R&D

services will be redesigned, which will be organised in cooperation with the aviation sector. Networks facilitate active R&D communication as well as the popularisation of science.

- Drawing up a new strategic plan, R&D target areas (incl. applied research in smart specialisation growth areas) will also be revised and, if necessary, these will be reformulated to correspond with national strategic guidelines (Transport Strategy 2035, Education Strategy 2035, R&D, Innovation and Entrepreneurship Strategy 2035) in order to enhance EAVA R&D and innovation capabilities and create a bridge between research and knowledge and technology transfer. Research groups will be created by target fields in order to initiate development projects, guide students to choose research topics, etc. In May 2020, a UAS working group was set up.

3.12. Service to society

3.12.1. Popularisation of EAVA main activities and contribution to the promotion of community welfare

The Academy continues to promote community welfare by distributing its resources and popularising aviation in a broader sense. A prerequisite for achieving EAVA's goals is to use efficient external communication, marketing measures, channels and methods in order to recruit motivated and capable future students. The main communication channels for informing external target groups are the EAVA homepage, social media channels (Facebook, Instagram, YouTube) and a newsletter addressed to potential candidates providing systematically up-to-date information on life at the Academy. In 2020, a quarterly newsletter for alumni and cooperation partners was started.

In 2019, the EAVA homepage design underwent an overhaul and the content was refreshed in order to make the information channel more user friendly and responsive to the target group's needs.

To promote EAVA study programmes, students may be 'shadowed' throughout the academic year. Being a 'student shadow' gives future candidates a more comprehensive understanding of the speciality, the learning environment and the organisation of studies. Feedback from 'student shadows' is consistently gathered; thus, their hosting can be improved on a continuous basis. To promote its study programmes, the Academy attends major education fairs and career days in Estonia. EAVA hosts school groups and organisations throughout the year in order to promote its goals and popularise aviation in the society. During the Academy's site visits, guests get an overview of the educational institution and its admission criteria. The ATS simulator, communication and navigation systems lab and aircraft maintenance hangar are visited. Visitors can also test their skills in aeroplane and helicopter simulators.

EAVA has attended *ca* 120 education fairs in Estonia and hosted more than 160 school tours during the past five years. Groups from companies, agencies and NGOs visit the Academy almost every month.

Since 2018, aviation has been increasingly popularised among pre-school and primary school pupils as well as the youth. The Academy has published a colouring book, which has been given to children's groups visiting the Academy as well as to our employees' children. each spring, the Academy organises an Open Doors Day and a free-of-charge preparatory course for potential candidates to provide a broader picture of aviation-related specialities and simplify the passing of the pre-tests necessary for admission.

The Academy organises the Estonian Aviation Seminar annually, which brings together aviation enterprises and aviation organisations from Estonia and abroad to discuss topical aviation issues. As a rule, the seminar has *ca* 200 participants. The seminar has actually become the most popular alumni reunion, as EAVA alumni constitute a fair share of Estonia's aviation sector. At the seminar, a travelling trophy 'Deed of the Year in Estonian Aviation' is awarded to an Estonian

aviation enterprise or organisation to recognise its work and achievements. In 2018, EAVA published its anniversary history book *Together towards new heights* [Ühisel jõul kõrguste poole] to mark the Academy's 25th anniversary.

Table 32. Simulator use statistics.

	2013	2014	2015	2016	2017	2018	2019
Aeroplane simulator	61	182*	78	58	106	135	147
Helicopter simulator	-	-	-	16	38	44	80

The Academy has introduced a new service to popularise aviation: flying an aeroplane or a helicopter in a simulator. Table 32 lists the number of visits. As a visit may involve several simulator flyers, the number of individual fliers is significantly higher.

As regards events addressed to the wider public, EAVA is one of the main co-organisers of the annual Estonian Aviation Days, which have become the largest aviation event in the Baltic states. Additionally, our contribution to the society involves regular Donor Days for our staff and students to donate blood, participation in charity events (e.g. Rat Race) and the support of sports events and youth initiatives by issuing flying simulator gift cards. An Academy staff member has also been involved in locating missing persons in search and rescue events using drones to help to find them in forests or on other demanding terrain.

In 2019, Estonia marked 100 years of aviation education in Estonia. To mark the anniversary, EAVA designed a stand and exhibited it at the Academy as well as at Tartu Lõunakeskus Shopping Centre throughout the summer. The stand exhibited aviation history and the specialities taught at the Academy. EAVA has also authored a short documentary *A Hundred Years of Aviation Education in Estonia,* which was shown in the Academy's communication channels (homepage, social media) as well as to cooperation partners and groups visiting the Academy.

The Academy boasts the only public aviation library in Estonia. Academy students, staff and alumni and others interested in aviation may register as users at the library (see Section 3.10.6). The Academy has a café open to the public throughout the academic year, which also provides a catering service.

The Academy premises (including video broadcasting and the catch-up option) may be used for events of up to 350 participants (seminars, trainings, meetings, celebrations, conferences). Partners may use the Academy's communication and navigation systems lab and workshops in the hangar. The communication and navigation systems lab is equipped with state-of-the-art measuring instruments and information technology equipment for conducting radio measuring and tests in radio communication and navigation. Both the composite lamination workshop and sheet metal processing workshop may be used in the hangar.

EAVA regularly observes media monitoring results and gathers feedback from visitors and school groups in order to assess the overall image of and efforts made to popularise the Academy.

3.12.2. Participation in non-profit advisory and decision-making bodies and alumni involvement

The EAVA staff is represented in various professional and trade associations as well as non-profit advisory and decision-making bodies, such as the Estonian Rectors' Conference of Universities of Applied Sciences and the Vice Rectors for Studies' Group thereof, the Aviation Terminology Committee, the Special Libraries Section at the Estonian Librarians Association, the Estonian Human Resource Management Association, the Estonian Chamber of Commerce and Industry, the Board of the Estonian Academic Sport Federation, the Estonian Association for Quality and the Quality Manager Certification Committee. EAVA has three representatives in the Aviation Terminology Committee and organises the work thereof. The Academy participates in the EU

Research and Innovation Programme Horizon 2020. The Academy representative is a transport expert in the Estonian Research Council's Programming Committee.

EAVA alumni comprise a significant part of the Academy community. As of 31 December 2019, the Academy had 794 alumni. The main channel used to keep the alumni in the loop and involved is the alumni mailing list, which forwards information on events, trainings and major management decisions. All job vacancies either at the Academy or its cooperation partners are also sent to the mailing list. A substantial part of the Academy's followers on social media are Academy alumni.

The alumni's contribution to teaching is remarkable. They are involved not only in conducting aviation trainings but also in governance, as they belong to the Advisory Board and Study Programme Councils. Our alumni have actively helped organise various fairs and Higher Education Days, such as 'Study in Tartu!' – a Higher Education Day in Tallinn. Alumni also participate in various sports and other events (Students' Christmas party, Students Winter Games, Ylipall).

3.12.3. Continuing education, goals and achievement thereof

EAVA organises both tailor-made training events for a fee and training for the wider public. The organisation of continuing training and the quality thereof follow the Rules for Providing Continuing Education and Ensuring its Quality at EAVA. Continuing training is offered as a course (lecture, seminar, practical session, e-learning) or a cycle of courses, a study day or days (seminar, conference, summer school), subject(s) in formal education or as agreed. Continuing education events are usually custom made; they are developed and provided if requested from the Academy. This is common practice in Estonia as the market is small; to prepare training courses without dedicated interest would be impractical and expensive. Trainings are also offered to neighbouring countries. Training events are mostly requested by aviation enterprises. Additional information on potential interest comes from questioning our cooperation partners and from feedback questionnaires. Therefore, training events are tailored to target groups' needs. The entity who has placed the training order receives information on topics and suitable modes of training prior to the training event. The Academy designs the training agenda with the contracting entity.

Continuing training objectives and target figures were set in the Strategic Plan for 2016-2020 (set for every other year). The share of training events in transport services and in motor vehicles, ships and aircraft study programme groups, respectively, are recorded in Table 33. EAVA draws conclusions on the objectives achieved at the end of the year and submits a summary to the Estonian Education Information System EHIS by the following March at the latest. Data on continuing training events is also included in the Annual Reports. Table 33 gives an overview of completed continuing training events.

Table 33. Continuing and in-service training courses 2015-2019.

	2015	2016	2017	2018	2019
Training objective	-	35	-	38	-
Training events	34	27	27	35	33
Transport services/Motor vehicles, ships and aircraft, respectively	64/36%	54/46%	58/42%	47/53%	45/55%
Incl. in English	15%	19%	19%	43%	40%
Target number of participants	-	510	-	530	-
Participants	531	465	255	623	545
Duration (academic hours)	557	1337	924	1668	770

There are many ways to get feedback from in-service training events. If the training group is small, the trainer will request feedback immediately after the event. In the case of larger groups, participants are asked to fill in feedback questionnaires after the training event (the response rate of online feedback is low). The trainers review the feedback and, if possible, take comments and evaluations into consideration when designing future trainings. Summaries of written feedback are entered in the Estonian Education Information System EHIS.

Since 2016, due to the increasing popularity of drones, UAV training events have been organised to increase drone operators' awareness of safety and relevant legislation. From 2016 to 2019, eight training events took place, another five in 2020. The Estonian Civil Aviation Administration has also supported and recognised the training activity.

In 2018, the Academy completed its first MOOC in English 'Introduction to Aircraft'; more than 500 participants from Estonia and abroad have completed the online course by now. In 2020, a MOOC in Estonian was launched. It focuses on the safe operation of unmanned aerial vehicles. The topic of the online course was chosen because UAVs continue to be popular and online training might reach a larger audience than contact training. It is a relevant training course, as the Civil Aviation Administration is implementing new UAV operator legislation. All training events are listed on the EAVA homepage in Estonian and English; the training schedule is continuously updated.

Strengths in providing service to the society:

- Entrants as a target group display high interest in aviation specialities; competitive admission makes the Academy one of the most popular higher education institutions in Estonia.
- Companies and institutions as well as schools are vastly interested in visiting the Academy and taking simulator flights.
- The Academy provides training events tailored to target groups' needs, whereas most of the trainings are ordered by aviation enterprises. Trainers are experienced specialists in their field.
- Organising various public training events, EAVA promotes the safe operation of unmanned aerial vehicles and the culture thereof.
- The Academy organises the largest aviation industry seminar in Estonia.
- There is keen interest to use the EAVA premises and study centre for various events.

Areas for improvement and future development activities to provide service to the society:

- The engineering study programme could benefit from more marketing support: aeronautical engineering is a field that could enhance cooperation with aeronautical engineering companies.
- EAVA has not managed to enter the international training market; more efficient marketing is needed to break through.
- Input for continuing education comes from aviation enterprises, and EAVA has remained rather passive. In collaboration with speciality departments, the Academy has to be more proactive in offering training events in order to better meet expectations.

4. SELF-ANALYSIS OF SELECTED STUDY PROGRAMMES

4.1. Self-evaluation of Aeronautical Engineering (CNS/TECH) study programme

Name of study programme, level:	Aeronautical Engineering (CNS/TECH), professional higher education
Structural unit responsible for study programme:	Department of Aeronautical Engineering
Main compiler of self-evaluation, study programme manager:	Nele Tootsi CNS Head of Training Lecturer (former Head of Department, Study Programme Manager) nele.tootsi@eava.ee
Brief description of the self-evaluation process and the report (period, workgroup, responsibilities):	The analysis covers the academic years from 2014/2015 to 2018/2019. The self-evaluation report was written during the period from December 2019 to June 2020. During this period, the members of the workgroup gathered for discussions while working in the Google Drive environment. Representatives of the Rector's Office and alumni have read the report and added their comments. Workgroup: Nele Tootsi, CNS Head of Training, Lecturer nele.tootsi@eava.ee; Karl-Eerik Unt, Head of Department, MTO Head of Training karl-eerik.unt@eava.ee; Ants Aaver, Senior Specialist, Department of Studies ants.aaver@eava.ee; Anett Agafonov, Specialist, Department of Studies anett.agafonov@eava.ee

4.1.1. Planning and management of studies

Study programme development. In 2017, to open the Aeronautical Engineering (CNS/TECH) study programme in the Engineering, Manufacturing and Technology study programme group, two EAVA study programmes – Aviation Communication and Navigation Systems (11857) and Aircraft Engineering (11817) – were merged. The new study programme has two main specialities: Communication and Navigation Systems (CNS) and Aircraft Engineering (TECH). Admission to the Aeronautical Engineering study programme began in 2018 and admission to the two previous programmes was closed.

The Aeronautical Engineering programme comprises basic training for certifying staff based on the provisions set forth in Commission Regulation (EU) No. 1321/2014. More detailed requirements are given in the Maintenance Training Organisation Exposition (MTOE).

The Aviation Communication and Navigation Systems programme comprises Air Traffic Safety Electronics Personnel (ATSEP) training and follows Commission Implementing Regulation (EU) 2017/373. Detailed training requirements are defined in the EAVA Principles and Procedure of ATSEP Training.

Development of the study programme follows the EAVA study programme development process (see Section 3.7). Besides the requirements arising from regulations (see Section 3.7.4), feedback from students, academic staff, employers, supervisors and alumni is taken into consideration when designing the study process and developing the study programme. Stakeholders are involved in

the development of the Aeronautical Engineering study programme through both their daily work and participation in speciality boards (Est).

Over the last three years, significant changes have been made to the study programme:

1. **The number of aviation subjects was increased in the first terms**. Familiarisation practice was moved to the spring term of the first year in order to familiarise students with career options before they chose their main subject. Aviation law, safety and security subject courses were moved to the first year of studies to introduce the principles of aviation quality and safety to students as early as possible.
2. Students' study load was evaluated and analysed which led to **adjustments in the volume of subjects and independent work** (Informatics, Theoretical Mechanics, Basics of Aircraft Structural Mechanics, etc.).
3. On the level of syllabi, studies were improved by increasing the volume of practical work (e.g. Testing Equipment in Radio Electronics, Basics of Computer Programming, Radiowave Propagation and Antennas, Communication, Mechatronic Systems, etc.).
4. **The choice of elective subjects was enhanced in the CNS speciality** (RPAS, Avionics, subjects in Economics and Entrepreneurship, electives from TalTech in the Module of Speciality Studies).

A number of goals to enhance the quality of the study programme are given in the EAVA Strategic Plan. Relevant actions have been designed. The Aeronautical Engineering Department continues to develop the study programme and organise studies with employers both in theoretical as well as practical knowledge instruction. To increase the quality of the study programme, external experts with long-term experience in aviation have been invited to lecture as visiting academic staff (see Section 3.3). They have been used to offer support to a starting academic staff member and/or if the Academy has no one with relevant rating.

EAVA chooses its foreign partners from among HEIs who have similar goals (IT Carlow, ENAC, Universitat Politècnica de Catalunya). The best practices gained from difficulties arising from bringing together regulated studies and professional higher education are shared with foreign partners. Various mobility programmes enable the exchange of students and academic staff members (see Section 3.5). In the future, cooperation should be closer in R&D and continuing training.

Achievement of learning outcomes and comparison with similar study programmes. Demand for engineering specialists in aviation continues to be high. Enterprises need engineers with good technical knowledge and skills to cope with the rapidly changing transport sector (e.g. passenger-to-freighter conversion of aircraft) and to provide services for the fast-developing field of UAS. The industry needs dedicated engineers whose knowledge and skills allow them to contribute to the development of the field and the safe integration of unmanned aviation with manned aviation. This is why increasingly more subject courses have been added to the Aeronautical Engineering study programme to enhance cutting edge engineering skills (e.g. Engineering Graphics I and II, MATLAB for Aerospace engineers) and teach unmanned aviation.

Objectives, learning outcomes, teaching content and methods as well as the assessment criteria and methods of the study programme correspond with one another. The study programme has been designed to comprise related thematic modules. The modules contain subjects which can be completed at any time during the studies on the condition that prerequisite subjects have been passed. Horizontal and vertical coherence of the study programme (Appendix 3) is ensured by compliance with the relevant regulations (MTO modular training, ATSEP framework). Heads of Training coordinate collaboration between academic staff members in teaching subject courses.

Feedback on the study programme is obtained and analysed in accordance with the relevant EAVA procedure (Section 3.7.2). The feedback has brought about the following changes:

1. Several subjects taught by partner HEIs are now taught in the EAVA premises. Thus, closer collaboration between EAVA and the academic staff of other HEIs and stronger EAVA control over the contents and quality of teaching is possible. Students also have less logistic problems.
2. EAVA continues to move aviation subjects to earlier terms (e.g. Aviation English, familiarisation practice in enterprises) as well as link basic subjects to aviation (e.g. Aviation Physics, Aviation Meteorology).
3. As employers have indicated that CNS graduates tend to have an inadequate picture of aviation, both the study programme and the syllabi have been improved (Basics of Air Traffic Management, Aviation Meteorology, Introduction to Aviation, Aviation Communication).

The Aeronautical Engineering study programme has been compared with study programmes at Erasmus+ partner HEIs. The reference basis comprises study programmes which integrate Modules of Basic Training for certifying staff (TECH speciality) and/or ATSEP subject fields (CNS speciality). We compare the standard length of studies in study programmes that have similar learning outcomes and the volume of subjects in differing study programmes (e.g. mathematics, languages, regulated speciality subjects).

In the TECH speciality, the reference basis comprised two study programmes at the Institute of Technology Carlow, Ireland: a 3-year Aircraft Systems study programme and a 4-year Aerospace Engineering study programme. The basic training for certifying staff is integrated in both study programmes but, unlike EAVA, the partner HEI does not issue a basic training certificate (their study programme does not offer sufficient practical training in Part-145 organisation).

Specialisation in two main specialities (CNS and TECH) is possible in the Aeronautical Engineering study programme. In addition, in the CNS speciality, Avionics, RPAS, Economics and Entrepreneurship subject courses can be chosen. In TECH – subjects for the basic training examinations can be chosen and it is possible to add subjects in the field of economics and entrepreneurship and telecommunication. Apart from the regulated study, students must complete optional courses to the minimum extent of 9 ECTS. The optional courses may be completed in partner HEIs (including foreign HEIs), diversifying the possibilities for complementing studies.

Every academic year, foreign visiting students have a range of subjects (35 ECTS) to choose from (e.g. Testing Equipment in Radio Electronics, Introduction to MATLAB and Simulink, Aircraft Construction, GNSS for Civil Aviation).

Our students carry out group work and experience teamwork during practical training at EAVA facilities (Speciality practice I, II, III) and in enterprises. These activities support the development of teamwork skills. Students may use their creativity as well as knowledge and skills acquired throughout their studies in project work and graduation theses. Developing digital competence (3D modelling, use of simulation environments, remote instrumentation control using LabView) important for engineers is also significant. Attitudes essential for ensuring corporate culture and safety in aviation are instilled throughout the studies.

Learning environment, material and financial resources. The learning environment gets on average 4.8 points on the 5-point scale of satisfaction (CNS, TECH (Est)).

Speciality studies are conducted using state-of-the-art study aids in the learning environment:

- The hangar – used in Aircraft Engineering to carry out initial practical training (Speciality Practice I, II and III). The hangar is equipped to simulate hangars in certified maintenance and repair organisations.
- The Communication and Navigation Lab – used to carry out practical work in Radio Measurements, Communication, Programming and Physics.
- The RPAS lab – used to teach subjects and conduct projects in the field of UAS.

The state-of-the-art equipment at the disposal of the Aeronautical Engineering Department supports not only practical work but also research in engineering (e.g. prototyping, applied

research). Proposals to acquire new equipment and study aids are made every year. Upon agreement with the head of the department or the academic staff, students may use all EAVA learning environments for individual work. A more systemic approach and better planning is necessary to solve the issue of how to support students when they use the equipment in their extracurricular activities (e.g. construct a UAV as a hobby project).

The budgetary resources EAVA has to teach its students have remained stable for years, as has the need for the resources because there have been no significant changes in the number of students. Apart from the budgetary resources, the Academy earns revenue from offering continuing training courses and laboratory services, which allows the Academy to cover the gaps in the budgetary resources and finance larger projects to develop the learning environment. During the period under review, learning environment development projects have also been financed from outside the Academy (e.g. ELASTRA, see Section 3.11).

Ecological and sustainable development which is important for aviation is discussed in several subjects. The staff supports these principles by being a role model (waste sorting, digitalisation of study aids and communication with the Academy, etc.). Hazardous waste (oils, paints, solvents, etc.) management is a topic discussed during the practical work in the hangar.

Students are periodically surveyed as regards the learning environment: the feedback has been very good. Small study groups and the close-knit academic family are the factors contributing to the learning-supportive social environment. Students are also asked to provide feedback on the social learning environment during their performance review interviews; no problems have been mentioned.

Strengths in the area of design and management of studies:

- As the study programme is developed in close cooperation with students, employers and alumni, the study programme complies with stakeholders' expectations.
- As the ATSEP and Part-66 study programmes are merged in the CNS/TECH study programme and the studies are conducted in accordance with international aviation regulations, the graduates may pursue applied or more academic careers either in Estonia or abroad.

Areas for improvement and future development activities:

- When we develop and manage the study programme, we should analyse the overlapping themes across study programmes so that we could do more teaching together (e.g. TECH + PIL, CNS + ATS).
- When we develop and manage the study programme, we should have closer collaboration with both local and foreign partner HEIs.

4.1.2. Learning, teaching and assessment

Admission process and support for the choice of speciality. Every year, the EAVA Council adopts Admission Rules that are followed in the admission process. The Rules outline the admission requirements, documents to be submitted and procedure of submission. Applications are submitted via the SAIS (Study Admission Information System). The number of student places and admission conditions follow the established procedure, ensuring fair access to education. Examination results in mathematics, the level of English and the score achieved in the competitive entrance examination are taken into consideration. The Admission Committee comprises Heads of Training and speciality academic staff and, if possible, aviation specialists as representatives of the industry are also involved. The entrance examination comprises two parts: written and oral. The written examination tests the candidate's logic and knowledge in mathematics and physics. The interview assesses the candidate's motivation, which is essential for completing aviation studies and entering the labour market. The aim is to discover whether the candidate has a realistic

understanding and expectation of the Aeronautical Engineering study programme and future work.

The number of applications per student place has been quite stable in the last four years (see Section 3.8.2) but lower than the EAVA average. Competition is comparable with that of other engineering specialities in Estonia.

The Academy promotes studies in the study programme jointly with other study programmes. Over the last two years, the focus has been on engineering specialities (e.g. preparatory courses, workshops to endorse a speciality, communication and navigation as a selective subject at the Jaan Poska Upper Secondary School).

In the Aeronautical Engineering study programme, students choose their speciality (CNS or TECH) at the end of the first academic year. Subjects such as Introduction to Aviation and Familiarisation Practice in Aviation Enterprises familiarise the students with the speciality study programmes and career options in Estonia and abroad. During their studies, the students meet with employers (representatives of the employers promote potential jobs and organise workshops, EAVA invites visiting lecturers from aviation organisations, etc.) and Heads of Training provide career counselling, etc.

Learner-centred approach and feedback. To bridge knowledge differences, underachievers with less knowledge and skills get additional consultations and practical training days. Students with better academic progress are offered extracurricular activities (e.g. study-related development work in summer).

Students may design their studies by taking elective and optional subjects (CNS – 27 ECTS, TECH – 39 ECTS). The Academy allows students to take subjects from partner HEIs (University of Tartu, TalTech, Estonian University of Life Sciences), increasing their choices and advancing their studies. In order to improve the contents and organisation of studies, the students participate in the work of the Student Council, provide feedback to surveys and contact the department directly to make proposals. Each term speciality briefings are organised for study groups to discuss study-related issues.

Teaching methods are described in the syllabi, which are compiled by a member of academic staff as set out in the EAVA Statutes of the Study Programme. The syllabi are approved by the Study Programme Manager who is obliged to monitor that the teaching methods are in compliance with the learning outcomes and objectives of the subject. Both lecturer-centred (participatory lectures) and learner-centred (group work seminars, project work, practical work, practical training, tasks for independent e-learning) teaching methods are used.

The academic staff mostly employs two modes of supervising independent work and giving feedback: written feedback (Moodle, e-mail) is used in e-learning, oral feedback in face-to-face meetings.

Students are involved in RDC: they solve components of major development projects in their graduation theses. Their feedback on supervision (theoretical knowledge instruction, practical training and graduation theses) is above 4 points on a 5-point satisfaction scale. There have been a few cases where supervisors who work in aviation organisations were short on time. A provision has been added to the Procedure for Graduation Theses (Est) to appoint an academic consultant, if necessary, to ensure both professional and academic supervision.

Learners give feedback on credits and actual workload upon completion of the subject course in a survey via SIS. In the academic year 2018/2019, the compliance of credits and students' workload in the Aeronautical Engineering study programme was analysed on the basis of the syllabi and e-support. This analysis also benefitted from the graduation thesis by Reilika Saar (Est), a student who interviewed students on this issue. As a result, the study load in several subject

courses and/or in independent work (e.g. Informatics, Aviation Law, Aviation Safety) was adjusted.

The number of respondents to formal questionnaires is low. Small study groups and close interaction make informal feedback on the study programme and organisation more efficient (performance review interviews, counselling sessions with coordinators, speciality briefings, meetings with Heads of Training, discussions with academic staff, meetings between the management and Student Council).

Assessment of students, APEL. Assessment methods are described in the syllabi. In a discussion with the academic staff, the Study Programme Manager monitors whether appropriate assessment methods have been selected to meet the learning outcomes of the study programme. In addition to assessing written tests of theoretical knowledge, independent written tasks (analyses, reports, written papers, practical training reports, lab work reports), practical tasks and team project work (e.g. in subjects such as Mechatronics Systems, Radio Measurements in Aviation) are assessed and must be orally defended in the Aeronautical Engineering study programme. Formative assessments are ever more widely used: students receive concurrent feedback on their knowledge and skills. Formative assessments are especially important in acquiring skills in practical subjects.

When the academic staff undergoes training of pedagogical skills, current assessment and new assessment methods are always covered. The academic staff members disseminate their best practices and experience in teaching, assessment and conducting e-learning at academic staff seminars. In addition to the description of assessment methods and criteria in the syllabi, they are discussed with students at the beginning of the academic year.

It is usually a member of academic staff who arranges assessments and compiles exercises to be assessed. One of the questions students have to answer via the SIS upon completion of each subject is about the equal treatment of students. Besides the responsible academic staff member(s), other teachers of the field also assess students' project work.

The reviewer and the Defence Panel assess graduation theses pursuant to the procedure adopted by the Academy (Est). The Graduation Thesis Defence Panel has five members: three to four from aviation enterprises or the regulator and one to two from the Academy (including partner HEIs).

The learner's prior and experiential learning is taken into consideration as per the procedure adopted by the Academy (Est). APEL is not applicable in the Aircraft Engineering basic training for certifying staff, as the subjects may not be accredited because of the aviation regulations in force. This factor also hinders students' international mobility.

The procedure for handling cases of academic fraud are outlined in the EAVA Study Regulations. To prevent fraud, awareness of the types of academic fraud has been increased among students in recent years. To discover cases of fraud, the URKUND anti-plagiarism system has been introduced. All members of the academic staff can use this system to check the authenticity of students' work. The procedure to follow if a case of fraud is discovered is laid out in the Study Regulations (see Section 3.4).

The role of the organisation of studies, including practical training, in achieving learning outcomes. Facilitation of students' mobility. Organisation of studies at the Academy supports domestic mobility, as students may complete optional and elective subject courses at partner HEIs. To facilitate participation in international mobility programmes, Heads of Training counsel students on the choice of foreign HEIs and subject courses; they support and maintain contact with the students throughout their external term.

During the period under review, the mobility of the Aeronautical Engineering students has remained stable, even if participation in the mobility programme means prolonged studies for the student. Apart from studies at a partner HEI, the Academy facilitates short-term mobility, allowing

students to attend designated speciality-related events (e.g. the CERN conference in Riga and the World ATM Congress in Madrid).

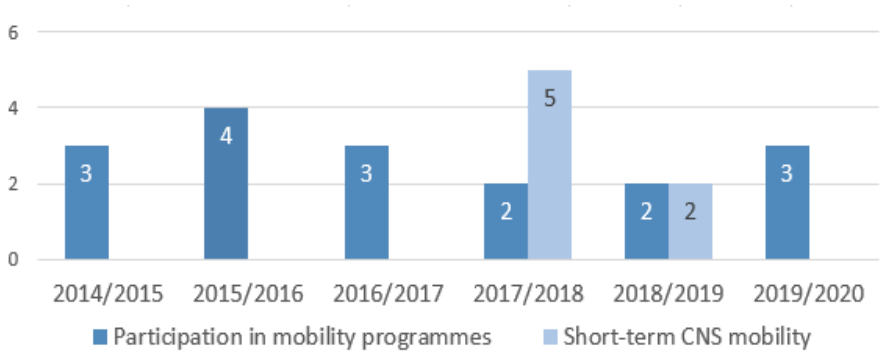

Figure 13. Participation in mobility programmes.

Practical training plays an important role in meeting the objectives of the study programme, such as validation of theoretical knowledge and practical skills as well as development of general competences. Sessions of practical training facilitate the meeting of graduates' skills and knowledge with employers' expectations. The very first professional experience is acquired in practical sessions and simulator practical sessions at the Academy to ensure the student's sufficient preparedness for in-company practical training.

The department organises students' briefings and/or visits to practical training venues. The students may have a say in choosing a practical training venue.

The practical training venues for TECH students are Part-145 organisations (e.g. MMRO, Estonian Air Force, Panaviatic Maintenance, Aerohooldus OÜ, Nordic Aircraft Service). The practical training venues are certified according to MTOE requirements. The tasks of practical training supervisors are defined in an agreement. A supervisor appointed by the Academy monitors the training.

Most of the CNS students find their own practical training venue as the speciality allows them to be more flexible; if necessary, the student's EAVA supervisor may help. A trilateral agreement between the venue, the EAVA supervisor and the student is signed to define the rights and obligations of each party. Practical training may take place in the Estonian Air Force, EANS, AS Tallinn Airport (including regional aerodromes) and Enics Eesti AS.

The EAVA supervisor is responsible for training and advising supervisors appointed by the practical training venue. Students' satisfaction with the practical training and its organisation is around 4.2 on a 5-point scale (CNS, TECH (Est)). The students consider practical training very important and are motivated to complete the training.

The students are responsible for adding selective and optional courses to complete their study programme. Signing a trilateral agreement, the students assume responsibility for their work during practical training. Assuming responsibility is one of the topics discussed in performance review interviews.

Students' support services. Reduction in interruption of studies. The Aeronautical Engineering Department has the highest number of underachievers as well as dropouts in the Academy. Therefore, during the last two academic years (2017/2018; 2018/2019) the department has introduced a system of performance review interviews. During performance reviews, obstacles hindering academic achievement are discussed: solutions are found in order to offer support from the Academy and overcome academic insufficiency as well as continue studies.

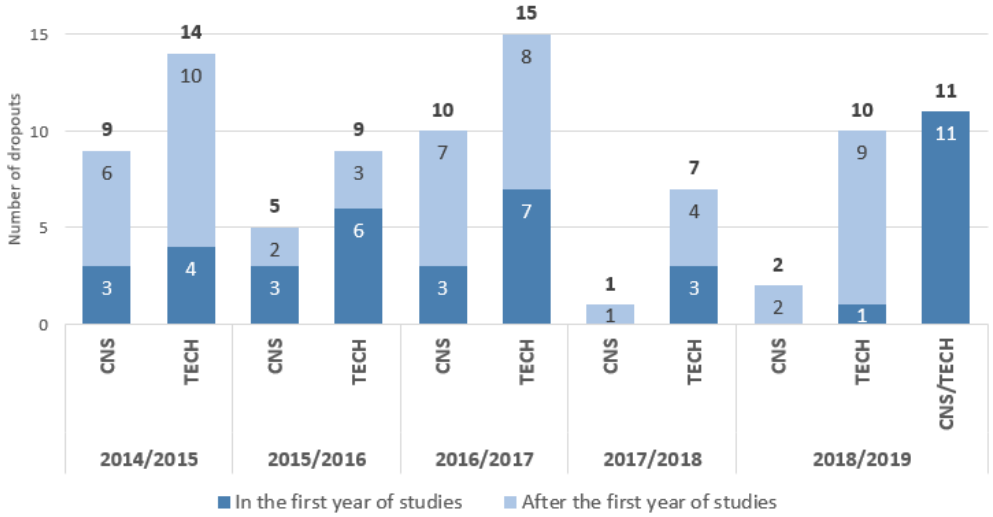

Figure 14. Number of dropouts.

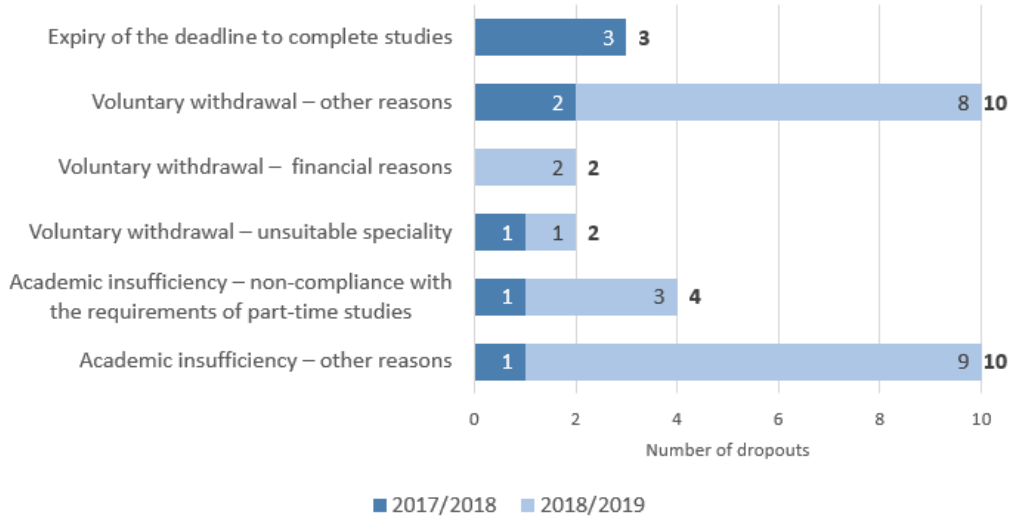

Figure 15. Reasons for interrupting studies.

The main reasons for interrupting studies are academic insufficiency and voluntary withdrawal from studies, mostly because motivation has dropped. The reason for interrupting studies in the fourth year is usually getting a job, which leads to lack of time and motivation. This happens at the end of studies and EAVA has no tools to make students complete their studies within the standard time. This is when the Academy suggests that students defend their graduation thesis as an external student; if necessary, it is possible to complete missing subject courses. The first point of contact for students is the coordinator who may counsel the student and refer them to further career and/or psychological counselling, if necessary. The department coordinator monitors academic progress. Additional consultations in difficult subjects may be arranged; academic attendance is monitored. In the case of long-term absence, the coordinator contacts the students to discover the reason for non-attendance.

To decrease interruptions, the department has undertaken several steps in order to increase the number of candidates per student place during competitive admission, improve academic counselling to prevent withdrawal from studies as well as analyse the factors that affect students' motivation with the aim of maintaining and increasing their motivation throughout studies.

Competitiveness of alumni in the labour market. Every year, conclusions are drawn on the alumni's employment and continuation of studies. The success of our alumni in the labour market is evaluated by the rate of employment and the employers' satisfaction – by their contentment

with the compliance of graduates' level of skills and knowledge with the employers' needs (Table 1). 87% of Aeronautical Engineering graduates get a job (60% of them are employed in aviation) and 7% continue their studies. This result complies with the goals of the EAVA Strategic Plan.

Both specialities in the Aeronautical Engineering study programme follow the requirements for training certified staff as described in aviation regulations. Students are briefed on relevant aviation regulation requirements (including examinations and the procedure for taking examinations) in dedicated briefings throughout their studies.

Students in the Aircraft Engineering speciality have to pass the relevant examinations of the module in order to get the Part-66 basic training certificate. A description of the module examinations is given in the MTOE. Students in the Communication and Navigation Systems speciality have to take the relevant ATSEP examinations described in the EAVA Principles and Procedure of ATSEP Training.

Alumni feedback has served as input for enhancing the horizontal and vertical cohesion of the study programme, binding several basic subjects (physics, meteorology) with aviation, adding more aviation subjects to the first year of studies and increasing the volume of practical work in the study programme.

Strengths in the area of learning, teaching and assessment:

- As study groups are small, the academic staff support the development of students' knowledge and skills continuously throughout their studies. Students, academic staff members and administrative staff of the department collaborate closely.
- Practical training supports theoretical knowledge instruction, teaching complies with aviation regulations and graduates' level of knowledge and skills is high, as is reflected in their high employment rate.

Areas for improvement and future development activities:

- Raising the quality of graduation theses through the training of supervisors; adding more written assignments to the study process.
- A more detailed analysis of cases of interruption and the introduction of measures to reduce interruption of studies.
- To analyse the organisation of practical training and thereafter improve the procedure (including making practical training abroad accessible to our students).

4.1.3. Development of academic staff, cooperation and internationalisation

Qualification of the academic staff and feedback. In its Strategic Plan, the Academy has set targets to be achieved by 2020: 85% of the academic staff in speciality studies with ratings and experience in aviation and 65% with a Master's or doctoral degree (Table 1). In the Aeronautical Engineering Department, 70% of the academic staff (including members of the administrative staff who teach) have aviation ratings or experience and 50% have a Master's degree. The intra-department goal is to organise periodic traineeships for its teaching staff in aviation enterprises (e.g. CNS at the Air Base and TECH in MMRO and NAS).

End-of-term student surveys via the SIS give feedback on the academic staff by subject. Students assess the following aspects of the academic staff on a 5-point scale:

- The lecturer's presentation skills are at a good level, they use a variety of teaching methods and encourage students to actively participate.
- The study materials prepared by the lecturer for learning the subject are available, relevant to the topic and up to date.
- Understanding of the subject matter was checked and feedback given by the lecturer.
- If necessary, it is possible to receive a consultation.
- The lecturer treated the students equally and was unbiased.

- Overall satisfaction with the lecturer (5 – Yes, I do agree, ..., 1 – I totally disagree).

The Department of Studies submits the results of the subject monitoring to Heads of Training who analyse the findings and plan improvement activities. The results are also analysed in the working group comprising Study Programme Managers and Heads of Training. They are used as input for performance appraisal interviews and annual performance assessments (Section 3.2) as well as for planning continuing training for the academic staff. The results of the subject monitoring help to adjust syllabi (e.g. to choose teaching and assessment methods) and develop the study programme. Each term, the results of the subject monitoring are discussed with the Student Council in order to obtain additional information on academic staff members and/or subjects that received negative feedback. The feedback and discussions may lead to the replacement of a member of academic staff. Students are also asked which academic staff member could be singled out as a role model. During the last three years (2016-2019), the average 4.7 points on a 5-point scale show a steady appreciation for the academic staff's work.

During the period under review, there have been several academic staff replacements in the TECH speciality for various reasons, which has caused work overload for the ordinary academic staff and recruitment of a number of visiting academic staff members.

In the CNS speciality, the academic staff has been consistent; therefore, there is closer collaboration between staff members, more cohesion between subjects and support for the methodological development of subjects. The Aeronautical Engineering Department is planning to introduce a system of responsible members of academic staff, which will make an ordinary academic staff member responsible for several subjects, who will involve and mentor, if necessary, (foreign) visiting academic staff.

Representatives of employers are involved as supervisors of practical training and graduation theses as well as in the work of the Graduation Thesis Defence Panel.

Academic ethics. Academic ethics and related issues are handled in compliance with the general values of the Academy and the principles outlined in the EAVA Study Regulations (Section 3.4).

Academic staff mobility. In the international cooperation strategy, the indicator for outgoing mobility is the cumulative growth in the share of academic staff who have experienced learning mobility. Learning mobility may take place either as teaching or self-improvement. EAVA has always satisfied all requests for staff mobility. 70% of the academic staff (including administrative staff who are involved in teaching) in the Aeronautical Engineering Department have participated in international mobility programmes. The international mobility of the academic staff is systematically planned and reflected in the staff's development plans and workload sheets.

In most cases, mobility programmes are used to attend training and visit and/or extend cooperation with partner HEIs. Participants' feedback has always been very good. The participants consider the experience useful as they observe new teaching methods, get ideas to develop subject courses, make new contacts to advance RDC and can therefore encourage students' learning mobility, too.

EAVA supports academic staff mobility to commercial enterprises and public institutions in order to keep teaching staff up to date in their practical skills and knowledge of current developments and challenges in their specific field of activity. Mobility programmes help academic staff stay informed of developments in commercial organisations and allow closer collaboration within the industry. Personal development plans help keep track of the necessary frequency of this type of mobility activity. Experience from mobility is shared with colleagues at intradepartmental meetings and academic seminars.

Recently, the involvement of foreign visiting lecturers and external lecturers has increased. During the last three years, foreign visiting lecturers and external lecturers from partner HEIs and experts with long-term aviation experience have taught at the Academy. When involving visiting lecturers (including foreign visiting lecturers), it is crucial to mentor them: visiting lecturers are usually

very strong in their speciality, but the Estonian higher education system may initially be unfamiliar to them and they may need support in teaching methods.

During the last three years, the following parties participated in delivering the Aeronautical Engineering study programme:

- The ordinary academic staff of the Academy.
- The administrative staff of the Academy.
- Academic staff from partner HEIs as per cooperation agreements:
  - University of Tartu – the English language and the Estonian language – 9 ECTS per academic year.
  - Estonian University of Life Sciences – Mathematics, Electrical Engineering, Electronics – 24-30 ECTS per academic year.
  - TalTech – subjects in CNS speciality studies – 30-45 ECTS per academic year.
- Visiting lecturers as representatives of employers – 25-30 ECTS per academic year per speciality.
- Foreign visiting lecturers and external lecturers – 9-30 ECTS per academic year.

Supporting academic staff development. In the Aeronautical Engineering Department, the Head of Training is responsible for advising and supporting both starting and visiting academic staff members in selecting teaching and assessment methods. The speciality lecturers have personal development plans (Section 3.6.2), which are adjusted at annual performance review interviews according to EAVA's goals, the employee's wishes and feedback from students and alumni. Each academic year, the academic staff can attend both professional and pedagogical training (such as management of the learning process, teaching methods and assessment, digital competences in the study process). Visiting lecturers can attend training to improve pedagogical skills and learn how to supervise graduation theses.

The academic staff carries out R&D at the enterprise level, researching subcomponents in research developments and projects. The academic staff members as graduation theses supervisors involve students in R&D. Some examples of R&D themes and development projects started and continued during the period under review are described in Section 3.11. In addition to teaching at the PHEI, the academic staff also teaches in continuing training courses, contributing to the dissemination of professional knowledge in the society. The courses are offered not only to aviation enterprises (e.g. EANS, AS Tallinn Airport, Magnetic MRO) but also outside aviation (Defence Forces, Defence League, State Infocommunication Foundation, etc.).

The performance of the academic staff is assessed in annual performance interviews and assessments; ordinary academic staff is also evaluated at regular evaluations (Section 3.6.2).

Strengths in the area of the development of academic staff, cooperation and internationalisation:

- The academic staff receives feedback: its systemic analysis may lead to corrective activities if necessary.
- The academic staff has good self-development opportunities. EAVA supports academic traineeships in aviation organisations.
- Dedicated seminars – From Lecturer to Lecturer – are a venue for the exchange of experience and dissemination of best practices.

Areas for improvement and future development activities:

- To increase the share of ordinary academic staff and prevent the continuous change of academic staff members.

- A system of responsible members of academic staff is introduced to recruit and support visiting lecturers in order to strengthen cohesion between subject courses.
- All measures and activities jointly planned in the Academy in order to enhance the development of EAVA academic staff (Section 3.6).

4.2. Self-evaluation of Air Traffic Services (ATS) study programme

Name of study programme, level:	Air Traffic Services (ATS), professional higher education
Structural unit responsible for study programme:	Department of Air Traffic Services Training
Main compiler of self-evaluation, study programme manager:	Anu Vare Head of Department ATSTO Head of Training anu.vare@eava.ee.
Brief description of the self-evaluation process and the report (period, workgroup, responsibilities):	The analysis covers the academic years from 2014/2015 to 2018/2019. The self-evaluation report was written during the period from December 2019 to June 2020. During this period, the members of the workgroup gathered for discussions while working in the Google Drive environment. Representatives of the Rector's Office and alumni have read the report and added their comments. Workgroup: Nele Tootsi, CNS Head of Training, lecturer nele.tootsi@eava.ee; Ants Aaver, Senior Specialist, Department of Studies ants.aaver@eava.ee; Anett Veski, Specialist of the Department of Air Traffic Services Training anett.veski@eava.ee.

4.2.1. Planning and management of studies

Study programme development follows the EAVA study programme development process (see Section 3.7). The design of the study process and the development of the study programme follow, besides regulations (see Section 3.7.4), feedback collected from students, academic staff, employers and alumni. The above stakeholders are involved in the development of the study programme and organisation of the study process daily as well as in the Study Programme Council (Est).

The ATS study programme was adopted on 27 December 2012. The development of the study programme was preceded by a comprehensive survey among employers, students and members of the Study Programme Council. Based on the analysis of responses, the objectives and structure of the study programme were changed. In later years, input for further minor amendments has arisen from regular feedback received throughout the implementation of the study programme. The study programme is developed according to the following principles.

A specialist with professional higher education has greater potential to develop and target management jobs inside as well as outside the enterprise. A specialist who has completed professional higher education studies differs from a colleague who has vocational education with the ability to see the broader picture, learn and analyse, with planning and analytical skills and

with the ability to make independent decisions and realise associations and links. They must have an opportunity to continue their Master's studies. Besides operational work, an ATS specialist is also involved in aviation safety management, training and development projects (including implementation of new technologies). Commission Regulation (EU) 2015/340 lays down the modules necessary for the acquisition of specific skills.

Several objectives as regards the quality of the study programme and its planned activities are related to the EAVA Development Plan. One of the main quality indicators in the ATS study programme continues to be compliance with the EASA-certified training organisation's requirements. External audits ensure the validity of the certificate. Significant indicators also include the dropout rate and the employment of graduates. The Strategic Plan sets a goal to achieve a graduate employment rate of 95% by 2020 (92% in 2019). As of 2019, 97.5% of the graduates from the ATS study programme are employed, whereas this number is 85% in aviation. The target performance indicator for the rate of interrupters in 2020 is 15% (17% in 2018). The trend of interrupters in the ATS study programme is uneven, fluctuating between 3.2 and 19% in the period from 2015-2019. A more detailed explanation is given in subsection 4.2.2.

To keep the study programme up to date, EAVA offers subjects on new technologies. One of the most recent additions is a module on RPAS-related subjects in the Module of Engineering (7 ECTS in 2019/2020).

EAVA external partners in the student mobility programme are HEIs in Europe that teach in the field of air traffic services. In the case of a graduation thesis defended in 2016, its theme was chosen in ENAC, France, as was its supervisor. As it is not expedient to offer an ATS Master's programme at the Academy, such partners are selected in which EAVA students could continue their Master's studies.

Achievement of learning outcomes and comparison with similar study programmes. To follow the principles outlined in subsection 3.7.3, the study programme is based on thematic modules. Modules comprise subjects which, timewise, may take place throughout the studies following the system of prerequisite subjects. We also pay attention to intermodular relationships. A more detailed description of coherence is given in the Appendices to the Self-Evaluation.

During the last three years, the following major changes have been introduced in the study programme:

- 2017 – Update and improvement of the content of speciality subjects actualised by the implementation of Commission Regulation (EU) 2015/340.
- 2018 – A wider choice of second foreign languages. Students may continue learning the foreign language they had learnt previously. Until 2018, the second foreign language was Russian.
- 2019 – Subjects in the RPAS Module are included in the study programme. Elective courses on pedagogical and communication skills from the University of Tartu in the Social Sciences Module were replaced with a new one, which better corresponds to EAVA needs.
- The volume of optional courses has increased in order to support mobility: from 6 ECTS in 2015/2016 to 20 ECTS in 2018/2019.

In 2017, EAVA and foreign HEI study programmes were compared in order to identify the extent to which subjects in the ATS study programmes overlap as well as to discover the major similarities and differences. The benchmark analysis comprised ATS study programmes for Bachelor's at the Technical University of Košice, Slovakia, and Anadolu University, Turkey.

The comparison showed that subjects in the ATS Basic Module and the Module of Natural and Exact Sciences at the Academy largely overlap with subjects taught at both foreign HEIs. The differences lie in the Modules of Social Sciences, Economics and Entrepreneurship and Engineering. We have started study programme development in order to cut the study programme from 240 ECTS to 180 ECTS. We are considering reducing the volume of the modules of Social

Sciences and Engineering. We would like to preserve the volume of the Economics and Entrepreneurship Module as the learning outcomes of this module are linked to a minor field of studies in the ATS study programme.

It is possible to specialise in ATCO ratings in the Rating Training Module within the ATS study programme. It is possible to acquire the following ratings: Aerodrome Control, Approach Control and Area Control. Counselling by the Study Programme Manager, who has information on the needs of the enterprise, plays a significant role in specialisation choices. There is a possibility to add a minor in Aviation Management. The volume of optional courses in the study programme is 20 ECTS. The relatively large volume of optional subjects enhances student mobility. The language of instruction in the speciality Rating Training Module is English. Thus, EAVA ensures that the aviation working language is acquired at a high level. In the autumn term of 2018, a foreign student participated in the studies.

Learning environment and material and financial resources. Annual planning of the learning and development budget ensures purposeful management of material and financial resources. A draft budget prepared on the level of the study programme (department) serves as an input for the Academy budget. Budget execution is also checked on the department level. Academy-earned funds offer an additional possibility to develop up-to-date learning infrastructure and motivate staff. Earnings from the sale of training courses and simulator lease cover equipment renewal and maintenance. The aim is that the share of earnings from the economic activity will reach at least 10% of the activity support. This target has been achieved. The largest learning environment enhancement projects, such as ATC simulator developments are financed with the help of EU projects (project ELASTRA, 2016-2020). These measures maintain study aids and laboratories at the level that meets the needs of the study programmes and remains attractive for cooperation partners. Continuous compliance with the requirements of the training organisation's certificate also ensures the adequate level of training facilities to attain the learning outcomes.

Primary learning environments in the ATS study programme are Moodle and the ATC simulator. E-learning environment Moodle supports students' independent work in theoretical subjects. 38% of the subjects in the ATS study programme have e-support. One of the aims in developing study aids is to support students' independent work. In addition to operational functions, the ATC simulator has functionality to record practical exercises, whereas the recordings are accessible for the students to repeat the exercises independently. The students' feedback shows high satisfaction with the learning environment. We get feedback on the learning environment from staff and student satisfaction surveys.

Several subjects reflect the idea of ecological and sustainable development (this is also important for aviation), whereas the staff is the advocate of the principles (waste sorting, digitalisation of study aids and communication with the Academy, etc.).

Strengths in the area of planning and management of studies:

- The study programme is developed in close cooperation with employers, students and alumni, ensuring the compliance of the study programme with stakeholders' expectations.
- The study programme is developed in compliance with international aviation regulations, allowing graduates to pursue careers abroad as well.

Areas for improvement and future development activities:

- To shorten the professional higher education study programme to three years.
- To analyse the possibilities and justification for opening vocational education.

4.2.2. Learning, teaching and assessment

Admission process and support for the choice of speciality. The admission process follows the Admission Rules adopted by the EAVA Council. The Rules set out the admission requirements,

documents to be submitted and the procedure of submission. An Admission Committee adopted by the Rector's directive organises admission. The Committee comprises the Study Programme Manager, speciality academic staff and, if possible, an employers' representative. Applications are submitted via Study Admission Information System SAIS. The main prerequisites for learning an ATS speciality are relevant personal characteristics and mental abilities as well as learning motivation and habits. Admission conditions are compiled to help assess these prerequisites. A set of FEAST tests is used to rank candidates. It is a professional online tool used in many European countries to identify students for the job of air traffic controllers. Besides tests, the candidates are interviewed to assess their learning habits and learning motivation as well as speciality motivation. The number of applications per student place is stable. Our target is at least ten applications per student place.

Table 34. Admission to the ATS study programme.

	2014	2015	2016	2017	2018	2019
Applications	85	107	60	64	76	70
Student places	6	6	6	6	6	8
Applications per student place	14.17	17.83	10	10.67	12.67	8.75
Admissions	6	8	4	6	6	8

The main communication channels for informing target groups about admission are the EAVA home page, social media (Facebook, Instagram and YouTube) and a dedicated newsletter for potential entrants, which systematically provides the target group with the most recent information about the Academy. Together with students, EAVA hosts student shadows throughout the academic year. Shadowing gives future entrants a more comprehensive understanding of the speciality, the learning environment and organisation of studies. Each spring, the Academy organises an Open Doors Day and a free-of-charge preparatory course to give a broader picture of aviation-related specialities and simplify preparation for admission.

Learner-centred approach and feedback. At the beginning of the first semester, a briefing is organised for first-year students to introduce options in the study programme and the impact thereof on specialisation in their future career.

To support the learner-centred approach, a dedicated subject – Lifelong Learning and Self-Management Skills – has been added to the study programme. By completing the subject course, the student experiences and learns to manage the learning process in order to support their learning and that of their fellow students. Students may design their studies with elective and optional courses; the Academy provides access to subject courses in partner HEIs (University of Tartu, Estonian University of Life Sciences), offering its learners a wider choice. Since 2013, students may choose Aviation Management as a minor field of studies. 69% of the study programme graduates have added a minor (2014-2019).

Feedback shows that a major concern of the students has been the inadequate preparation to pass higher-level mathematics. The Academy offers first-year students a bridge course to reduce disparities between students' levels in mathematics.

Teaching methods are described in the syllabi, which are compiled by a member of academic staff as set out in the EAVA Statutes of the Study Programme. The syllabi are approved by the Study Programme Manager who is obliged to monitor that the teaching methods are in compliance with the learning outcomes and objectives of the subject. Both lecturer-centred (participatory lectures) and learner-centred (group work seminars, practical sessions, practical training) teaching methods are used. Individual learning is used in Rating Training, whereas the student gets concurrent feedback on all performance efforts.

The academic staff primarily uses two modes of supervising independent work and giving feedback. Written feedback (Moodle, e-mail) is used in e-learning. The simulator has a catch-up functionality which allows the student to check and analyse the performance either together with the instructor or independently.

Learners give feedback on credits and actual workload upon completion of the subject course in a survey via the Study Information System. In the academic year of 2018/2019, the compliance of credits and students' workload was analysed on the basis of the syllabi and e-support. This analysis also benefitted from the graduation thesis by Reilika Saar (Est), an ATS student who interviewed students on this issue. The analysis led to the adjustment of the study load in several subject courses and/or in independent work (e.g. Informatics, Aviation Law, Aviation Safety).

Students solve components of major development projects in their graduation theses and are therefore involved in R&D. Here are a few examples of graduation theses:

- Mariliis Õun – RPAS operations and risk analysis in Tallinn control zone (2015).
- Kaarel Roopärg – Interactive web map application for unmanned aerial vehicle operators (2015).
- Teele Kohv – The possible effects of NEFRA air traffic on the operations of Tallinn terminal control area (2016).
- Marleen Varblas – Calculation of the cameras' angle of view and angle of position for the Remote Tower System at Tartu airport (2017).
- Janeli Patrail – A comparative analysis of the ATS procedures at Kuressaare and Tartu aerodromes to evaluate the possibilities for concurrent ATS provision from the remote tower (2019).

Themes are frequently suggested by enterprises; supervisors come from enterprises, too. Students are also more interested in operational themes. Corporate supervisors' little experience in supervising academic papers and guiding students has been slightly problematic. To solve this problem, an academic consultant from the Academy may be appointed.

Assessment of students and APEL. Modes of knowledge checks are increasingly frequently combined and the final grade evolves as a result of several modes of knowledge check. Thus, students have to participate actively throughout the term (e.g. independent work, participation in seminars, tests, group work). The academic staff helps the students develop habits of continuous independent work. Practical training is assessed on the basis of the supervisor's and student's reports. The clearly defined teaching goals of subject courses ensure objective assessment.

In training the pedagogical skills of the academic staff, assessment is one of the topics under view in order to introduce various assessment methods. Members of the academic staff share their experience and best practices in teaching, assessment and e-learning at academic staff seminars. The teaching goals of subject courses and the requirements for completing the subject course are accessible via the SIS by the start of the subject course at the latest. Together with students, the member of academic staff sets the deadlines for work to be assessed and the time period necessary to prepare for a knowledge check. Individual learning and formative assessments are used in Rating Training. Two members of academic staff assess exercises at the examination simultaneously: a more detailed description of the procedure is given in the general part of the Self-Evaluation Report (see Section 3.9).

The reviewer and the Defence Panel assess graduation theses pursuant to the procedure adopted by the Academy (Est). The Graduation Thesis Defence Panel comprises five members: as a rule, three to four represent aviation enterprises and one to two the Academy (including partner HEIs).

To ensure teaching quality and to check whether teaching and knowledge comply with the syllabus, internal audits and, in the Modules of Basic Speciality Studies and Rating Training, external audits are carried out. An Audit Plan (Est) is compiled every year.

The learner's prior and experiential learning is taken into consideration as per the procedure adopted by the Academy (Est). There have been no cases of rejection as prior to submission of the APEL application, we counsel the applicant and explain APEL rules and principles. With certified specialities, it has been problematic to accredit subjects prescribed by aviation regulations. No such applications have been submitted to the ATS speciality.

The procedures for handling cases of academic fraud are outlined in the EAVA Study Regulations. To prevent fraud, awareness of the types of academic fraud has been increased among students in recent years. The URKUND anti-plagiarism system has been introduced. All members of academic staff can use this system to check the authenticity of the learners' work. The procedure to follow if a case of fraud is discovered is laid out in the Study Regulations.

The role of the organisation of studies, including practical training, in achieving learning outcomes. Facilitation of students' mobility. To achieve learning outcomes, it is necessary to consider in the organisation of studies that theoretical knowledge is to be attained prior to the relevant practical training.

Practical training plays an important role in meeting the objectives of the study programme, such as validation of theoretical knowledge and practical skills as well as development of general competence. The very first professional experience is acquired in practical sessions and simulator practical sessions at the Academy.

During in-company practical training, an air traffic controller is observed at the workplace and, if possible, the student trainee operates the air traffic control service under the supervision of the instructor from the enterprise. Besides verification of professional skills, students get a more comprehensive insight into employers' expectations, whereas the employers get an overview of the students' abilities and levels. Concurrent feedback by corporate supervisors is valuable input in changing the organisation and contents of studies in order to achieve the required learning outcomes.

Speciality training can take place only in an enterprise that holds an ANS service provider's certificate. The training agreement is concluded between EAVA and the enterprise. The agreement defines parties', including the trainee's, obligations as well as supervision and reporting terms. The student is informed of the contents of the agreement. Students can choose a suitable period in the schedule to complete the practical training. As a rule, students' feedback on the practical training is very positive; on average four to five on a 5-point scale. In-company practical training is considered very useful and motivating. Students would like to work even more ATC shifts during practical training.

ATS practical training instructors are required to have an OJTI or STDI aviation licence to comply with Commission Regulation 2015/340. To acquire or maintain ratings, it is necessary to undergo standardised training. EAVA is responsible for maintaining the ratings of its supervisors, and enterprises are responsible for the ratings of their employees.

The organisation of studies at the Academy supports domestic mobility, as students may complete optional and elective subject courses at partner HEIs. One of the compulsory subjects – Estonian Orthography and Composition – is taught at the University of Tartu. To facilitate participation in international mobility programmes, heads of training counsel students on the choice of external semester, foreign HEIs and subject courses. The rate of students participating in learning mobility was targeted to reach 6% by 2019. In the period from 2014-2019, 5.5% of ATS students have studied at a partner HEI and 11.5% of ATS students have completed practical training at a foreign enterprise.

Students' support services. Reduction in interruption of studies. Students are entitled to contact the Department of Studies and the speciality department to get information and

counselling in order to solve study- and career-related issues. Counsellors are introduced to the students in the first term and their contact details are accessible on the EAVA home page.

Students who seek psychological counselling have to contact the Department of Studies to get an aviation psychologist's contact details. Free anonymous online psychological counselling is available at lahendus.net. In speciality studies, students' attendance is registered every day.

Nearly all modules of the study programme offer a significant number of elective courses, which contribute to the flexible completion of the study programme.

Table 35 shows the rate of dropouts in the period from 2015-2019.

Table 35. Rate of dropouts (2015-2019).

	2015	2016	2017	2018	2019
Number of students	42	31	28	26	28
Dropouts, %	8 19.0%	1 3.2%	3 10.7%	1 3.8%	3 10.7%
Number of students (in the first year of studies)	7	11	6	6	8
Dropouts (in the first year of studies), %	1 14.3%	0 0.0%	1 16.7%	0 0.0%	2 25.0%

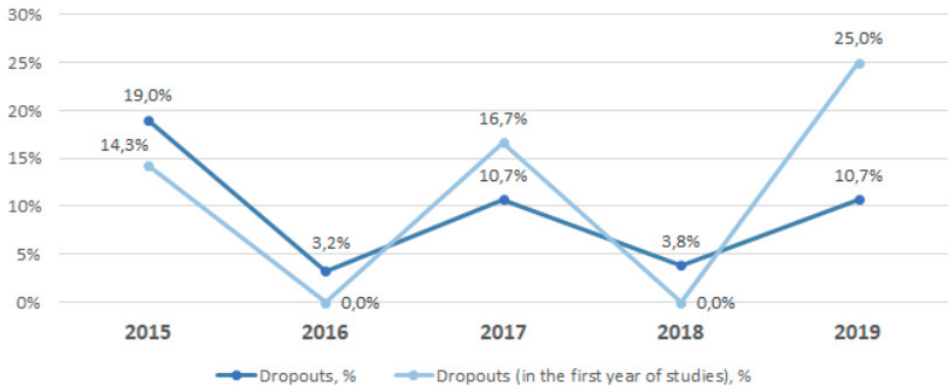

Figure 16. Trend of interruptions.

The trend of interruptions is uneven (Figure 16). The number of students in the study programme is relatively small; therefore, each interrupter causes a significant change in the trend. Figure 17 shows the reasons for interruptions in studies. Most cases are caused by the expiry of the deadline to complete studies. A substantial reason lies in students' early employment, which leads to lack of time and motivation. This usually happens at the end of studies and the Academy has no tools to convince the student to complete studies within the standard time. Students are offered the possibility to defend their graduation thesis as an external student and, if necessary, complete missing subject courses. To prevent academic insufficiency, students are offered academic counselling, including additional tutoring in more problematic subjects; academic attendance is observed and long-term absentees are contacted to find out the reason for non-attendance. To reduce interruption due to the choice of an unsuitable speciality, potential student candidate groups are targeted with dedicated activities (student shadowing, preparatory courses). The candidates are asked about their professional motivation in admission interviews.

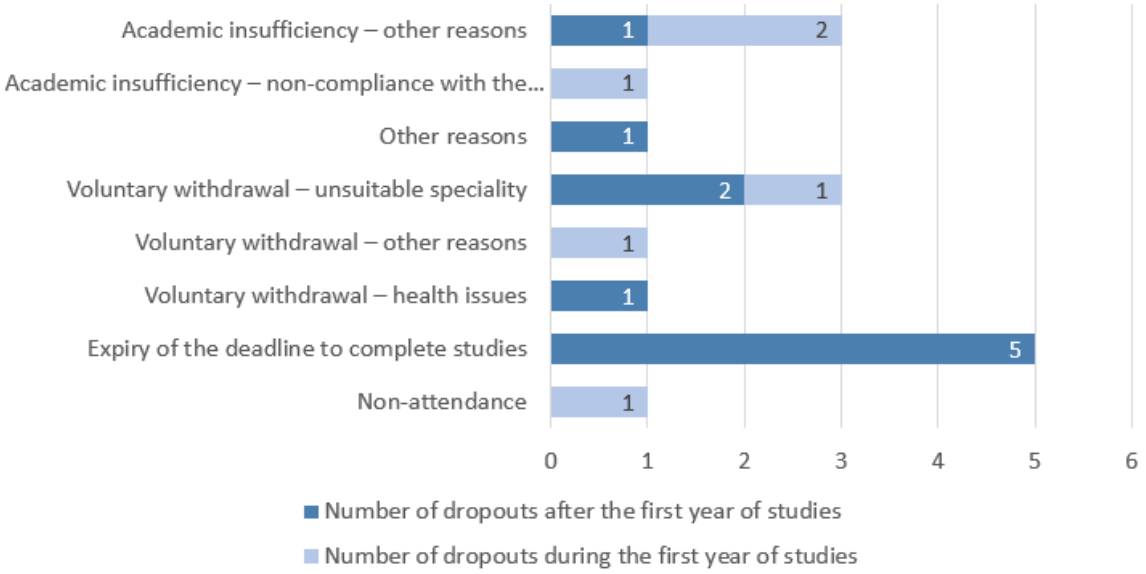

Figure 17. Reasons for interrupting studies in the ATS study programme (2014/2015 to 2018/2019).

To uphold students' motivation, the subject course Introduction to Aviation has been moved to the first term in the study programme. The course introduces more significant aviation enterprises in Estonia and their relationship with aviation education in general and, in particular, with the specialities taught at the Academy. Together with EANS, the main employer of ATS students, a so-called Motivation Day is organised to mark the start of speciality studies at the beginning of the third year of studies. Students are invited to visit the enterprise; they are treated as future colleagues and familiarised with the working conditions, followed by social interaction.

Competitiveness of alumni in the labour market. Students who complete the study programme receive, upon completion of the Speciality Rating Training Module, an ATCO Student Licence. The students may apply for jobs in air traffic service providers in Estonia and abroad. We have to bear in mind that the position of air traffic controller is highly specific. To expand the graduates' career choices, we offer a minor in Aviation Management. By completing the Module of Social Sciences and in-company practical training, the students develop their social skills. The practical training procedure includes individual feedback for all students, providing, *inter alia*, support to develop personal qualities.

A prerequisite for applying for an ATCO Student Licence is the completion of speciality modules as required in the ATSTO Manual (Est). A summative assessment of aviation competencies takes place in the simulator as an exercise at the exam. Assessment requirements are explained to the students during the briefing at the beginning of the term and again prior to final examinations. The condition for completing the study programme is to write and successfully defend a graduation thesis. A guidance document for assessing graduation theses has been compiled (Section 3.9.1). ATS.056 Seminar on Compiling the Graduation Thesis is a subject within which the principles of assessment are explained to students.

The EAVA Strategic Plan sets a target to have 95% of graduates employed by 2020 (92% by 2018). As of 2019, 97.5% of the graduates from the ATS study programme are employed, whereas this number is 85% in aviation.

Employees are surveyed to examine their satisfaction with graduates' professional knowledge, skills and social competences (Figure 11). A survey conducted from 3-19 April 2019 reveals that 100% of the respondents prefer to employ EAVA graduates, whereas 40% recommend others to do the same.

Surveying alumni employment provides us an overview of the fields in which our graduates work apart from air traffic service provision. The results allow us to evaluate the contents or weight of the essential modules of the study programme. In addition to air traffic control, our graduates are employed mainly in development teams as ECAA officials and in aviation enterprises as flight operations officers. Therefore, we have reduced the volume of the Module of Engineering and, together with the Department of Aviation Management, developed a minor in Aviation Management.

Strengths in the area of learning, teaching and assessment:

- Practical training takes place in aviation enterprises, i.e. in the graduates' future places of employment.
- Education and training conducted in compliance with international aviation standards enables graduates to find work internationally.
- Strong connection of the themes of students' graduation theses with the needs of enterprises.
- Small groups and continuous assessment throughout speciality studies allow EAVA to provide individual support to learners.

Areas for improvement and planned improvement activities:

- To expand the scope of e-learning, giving students the opportunity to work independently in order to complete practical studies.
- To expand the range of practical training venues abroad.

4.2.3. Development of academic staff, cooperation and internationalisation

Qualifications of the academic staff and feedback. The EAVA Strategic Plan sets targets for the proportion of academic staff in speciality studies who have ratings and experience related to aviation (85% in 2020) and who hold a Master's or doctoral degree (65% in 2020, see Table 1). As of 2019, 57% of academic staff members had a Master's or doctoral degree and 91% of the academic staff teaching in ATS speciality studies have aviation competences or experience. 100% of the academic staff in Rating Training hold aviation licences. The preparation of academic staff members who teach speciality courses meets the overarching qualification requirements as well as the relevant requirements outlined in the training organisation's Training Manual arising from Commission Regulation 2051/340.

The workload of full-time academic staff complies with the workload agreed in the EAVA Statutes of the Academic Employee. To meet a temporarily increased workload, teachers and instructors are recruited under a mandate agreement.

Students provide feedback on the academic staff in student surveys at the end of each term via the SIS. A more detailed description of the process and measures taken is given in Section 3.7.5 of the Self-Evaluation Report. In dialogue with the Student Council, it is decided which academic staff members could be singled out as a role model. In the autumn term of 2019, the academic staff attained on average 4.4 points, whereas speciality academic staff in the ATS study programme scored between 4.33 and 5.00 points on a 5-point satisfaction scale.

Academic ethics. The academic staff follows, in academic ethics and the issues thereof, the EAVA Study Regulations, which are described in Section 3.4.

Academic staff mobility. The EAVA academic staff participates in outgoing mobility in order to observe new teaching methods, get ideas to develop subject courses, find new contacts in R&D as well as promote students' learning mobility. The ATS Department has five staff members who teach, including a visiting academic staff member and a staff member who has taught at a foreign HEI. The academic staff of the department is obliged to participate in ATC instructor refresher training at the EUROCONTROL Institute of Air Navigation Services.

The aim is for foreign visiting academic staff to comprise a stable 15% of the entire EAVA academic staff during an academic year. From 2016 to 2020, every academic year, one visiting academic staff member worked under a mandate agreement in the ATS Department (20% of the staff in the department). In addition to visiting academic staff, we engage corporate specialists. They conduct 39% of the teaching in the Module of Basic Speciality Studies. Such cooperation ensures cutting-edge knowledge and practical examples in teaching. Students value this cooperation.

Supporting academic staff development. In the ATS Department, the head of training is responsible for advising and supporting both starting and visiting academic staff members in selecting teaching and assessment methods. Ordinary academic staff have development plans, which are adjusted at annual performance review interviews according to EAVA's goals, academic staff member's wishes and feedback from students and alumni. Each academic year, academic staff can attend both professional and pedagogical trainings (such as management of the learning process, teaching methods and assessment, digital competences in the study process).

Academic staff traineeships are recorded in the development plan of the person. Traineeships are planned to be sufficiently frequent. Traineeships at the service provider keep the academic staff member informed of corporate developments and allow closer collaboration with employees of the company (involve them as academic staff, supervisors of practical training or graduation theses).

In organising the work of the academic staff of Rating Training, the Academy allows them to work part-time as air traffic controllers in EANS. They may use knowledge and skills from their operational experience in updating syllabi (e.g. traffic situations in simulator exercises, level of traffic congestion). To promote better intra-academic collaboration and disseminate best practices, dedicated seminars – From Lecturer to Lecturer – are organised; academic staff members may share success stories and problematic cases.

Strengths in the area of development of academic staff, cooperation and internationalisation:

- The academic staff gets feedback; feedback is subject to systemic analysis and, if necessary, improvement activities are planned.
- The academic staff has good opportunities for self-development and traineeships are encouraged.

Areas for improvement and future development activities:

- To introduce mentoring in order to support young lecturers and practitioners.
- Overarching research activities for academic staff (Section 3.6).

5. APPENDICES

Appendix 1	Study programme of Aeronautical Engineering
Appendix 2	Syllabi of Aeronautical Engineering
Appendix 3	Scheme describing the interrelations between the subjects of the Aeronautical Engineering Study Programme
Appendix 4	Academic staff of Aeronautical Engineering
Appendix 5	Study programme of Air Traffic Services
Appendix 6	Syllabi of Air Traffic Services
Appendix 7	Scheme describing the interrelations between the subjects of the Air Traffic Services Study Programme
Appendix 8	Academic staff of Air Traffic Services
Appendix 9	Table of employee satisfaction surveys 2015-2019

6. SOURCES

https://lennuakadeemia.ee/academy/ia-sources